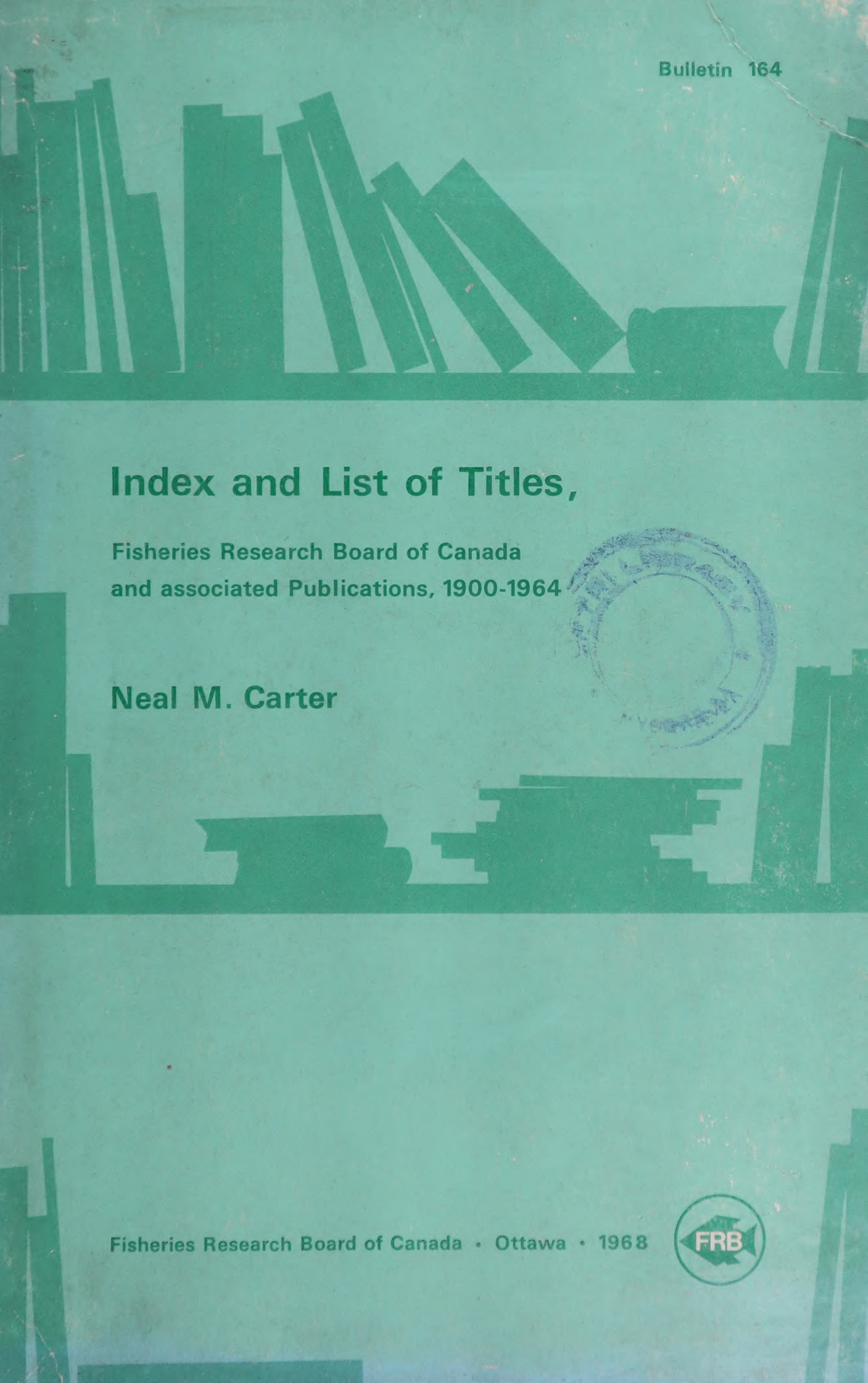

Bulletin 164

Index and List of Titles,

Fisheries Research Board of Canada and associated Publications, 1900-1964

Neal M. Carter

Fisheries Research Board of Canada · Ottawa · 1968

INDEX AND LIST OF TITLES,
FISHERIES RESEARCH BOARD OF CANADA
AND ASSOCIATED PUBLICATIONS,
1900–1964

Bulletins of the Fisheries Research Board of Canada are designed to assess and interpret current knowledge in scientific fields pertinent to Canadian fisheries.

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BULLETIN 164

Index and List of Titles, Fisheries Research Board of Canada and Associated Publications, 1900-1964

By Neal M. Carter

FISHERIES RESEARCH BOARD OF CANADA
Ottawa 1968

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Contents

Editor's Foreword, vi

Preface, vii
  Acknowledgments, xvii

Abbreviations used in the index, xvii

FRB research establishments, xviii

Index, 1–401

Appendix: List of publications and titles, 403–649

  Contributions, 405

  Journal, 420

  Bulletins, 471

  Canadian Fauna Series
    Canadian Atlantic Fauna, 477
    Canadian Pacific Fauna, 477

  Progress Reports
    Progress reports of FRB Atlantic Coast Stations, 478
    Progress reports of the London, Ontario, Biological Station and Technological Unit, 495
    Progress reports of FRB Pacific Coast Stations, 496

  Circulars, 523

  Miscellaneous Special Publications, 544

  Bulletins of the Newfoundland Government Laboratory
    Newfoundland Research Bulletins, 545
    Newfoundland Service Bulletins, 546

  Studies from the Board's Establishments, 547

  Studies Supplement, 590

  Annual Reports, 648

EDITOR'S FOREWORD

As pointed out by the author in the Preface, this compilation greatly expands and updates an earlier Index and List of Fisheries Research Board of Canada Publications. The author of this book, Dr Neal M. Carter, is a former associate editor of the Fisheries Research Board and since his retirement in 1962 has resided in West Vancouver, B.C. Dr Carter has for the first time brought together a list of, and index to, all FRB publications up to and including 1964. In addition, he has compiled and indexed 1416 articles which were published over the years but which never did get recorded or indexed in FRB lists.

J. C. Stevenson

PREFACE

Based on Bulletin 110 of the Fisheries Research Board of Canada "Index and list of titles, publications of the Fisheries Research Board of Canada, 1901–1954" published in 1957, this present Bulletin very considerably expands its predecessor.

This Bulletin now presents a subject–author index, and list of titles, of the contents of 65 years (1900–1964) of publications issued by the predecessors of the Fisheries Research Board of Canada (a Board of Management for Canadian Government Marine Biological Stations, 1899–1911, succeeded by the Biological Board of Canada, 1912–1937) and by the present Board from 1938 to the end of 1964, the cutoff date of publication for material to be listed and indexed herein. In addition to thus listing and indexing 10 more years of the Board's own publications than were covered in Bulletin 110, it indexes the two series of Board *Progress Reports* listed but not indexed in that Bulletin, and both lists and indexes the various Board *Circulars* series which only received mention in that Bulletin.

This Bulletin also includes listing and indexing of 2301 items (articles, reports, etc.) appearing from 1919 to the end of 1964 that are considered non-Board publications because they appeared in media other than the Board's own publications. Most of these items were written by Board staff about Board investigations and published in those other media with the Board's knowledge or permission; the rest were published for the most part by persons who were or are associated in some way with the Board, or whose investigations were or are associated with those of the Board. Of these 2301 items, 395 published from 1919 to 1954 were listed and indexed in Bulletin 110 as a series of consecutively numbered *Studies*; the present Bulletin covers 490 more, up to Study No. 885. The annual bindings of groups of these *Studies* (described below under II.9) bear the name of the Board on their covers, but their contents are considered as "non-Board publications" although most are articles *from* Board establishments. The other 1416 items were published from 1900 to 1964 and are listed and indexed herein for the first time as a series, termed the *Studies Supplement*. They also are considered (and further described below under II.10) as "non-Board publications."

The following sections of this Preface further describe the contents of this Bulletin.

I. BOARD PUBLICATIONS LISTED AND INDEXED IN THIS BULLETIN*

1. Contributions

(a) *Contributions to Canadian Biology* (listed on pages 405–409; indexing abbreviation: C)

Issues appeared with the following dates: 1901, 1902–1905, 1906–1910, 1911–1914 (in two Fascicles, I and II, pagination in the latter recommencing with page 1), 1914–1915, 1915–1916, 1917–1918, 1918–1920, and 1921 (in two Parts, No. 1 and 2, and No. III–XII, with consecutive pagination throughout the two Parts).

Because no volume numbers are shown, in bibliographical citations and in this index the above years or year-groups have to be given, and for the 1911–1914 issue the Fascicle number has to be indicated because of the recommenced pagination in Fascicle II. The several papers in each issue are serially numbered, but in bibliographical citations these numbers are best ignored, and are so ignored in this index. In the 1921 issue each of the 12 papers comprising the two Parts has its individual pagination at the *top* of the pages, but only the continuous pagination at the *foot* of the pages is used in references and in this index.

(b) *Contributions to Canadian Biology (New Series)* (listed on pages 410–411; indexing abbreviation: C)

Beginning in 1922, the Contributions were grouped into volumes, each continuously paged at the *foot* of the pages, and each composed of a number of separate issues. These issues

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*For brevity and convenience, all Roman numerals used for early volumes of the *Contributions* and *Journal* and for early issues of the *Bulletins* have been converted to Arabic numerals in the listings and index.

were not numbered, but each separate paper carried a number. Two volumes (I with 3 issues and II with 2 issues) appeared under this title during 1922–25. The individual paper numbers and their separate pagination at the *top* of the pages can be ignored; in references and in this index only the volume and continuous page numbers are used.

(c) *Contributions to Canadian Biology and Fisheries (New Series)* (listed on pages 412–419; indexing abbreviation: C)

In 1926 the above change of name was made, but the volume numbers continued from that of II in (b) above. Volumes III–VIII appeared under the new title during 1926–34. Beginning with Volume VI, No. 11–12, the articles were grouped into four series: A. General; B. Experimental; C. Industrial; D. Hydrographic. However, these series designations, and the numbers assigned to the individual articles in each series, can be ignored since they are additional to the regular numbered sequence of papers in each volume. In references and in this index, only the volume number and their continuous pagination at the foot of the pages are used; the individual pagination of the articles at the top of the pages is ignored.

2. Journal

(a) *Journal of the Biological Board of Canada* (listed on pages 420–423; indexing abbreviation: J)

The *Journal* replaced the Contributions with the completion of Volume VIII of the latter, and the numbering of the volumes recommenced with Volume I. Volumes I–III, consisting of 6, 5, and 6 numbered issues, respectively, appeared under this name during 1934–37. Numbering of individual papers and their grouping into the four Series named under 1(c) above were discontinued, and consecutive pagination alone (at the top of the pages) throughout each volume was instituted.

(b) *Journal of the Fisheries Research Board of Canada* (listed on pages 423–470; indexing abbreviation: J)

This change in name of the *Journal* was occasioned by the change in name of the Board in 1937 by Act of Parliament, but the numbering of volumes was not interrupted. Volumes IV–X, consisting of 7 to 10 numbered issues each, were published during 1938–53. Commencing with Volume XI (1954) 6 issues per year were published (until increased to 12 issues per year in 1966). Arabic numerals for volume numbers supplanted Roman numerals commencing with Volume 13. This Bulletin covers to the end of the 1964 Volume 21 of this continuing publication.

3. Bulletins

(a) *Bulletins of the Biological Board of Canada* (listed on pages 471–473; indexing abbreviation: B)

This series began in 1918. The *Bulletins* are consecutively numbered, each dealing with a specific topic. Numbers I–LV appeared under this name to 1937.

(b) *Bulletins of the Fisheries Research Board of Canada* (listed on pages 473–476; indexing abbreviation: B)

Series (a) of the *Bulletins* was superseded by this series under the above new name without interruption of numbering. Numbers LVI–LXXXV and 86–148 appeared during 1939–64. Bulletin No. LIX was completely revised and issued under a new title as No. 89. Bulletin No. LXVIII was also completely revised but issued under the same title, as No. 68 (Second Edition); to distinguish these in this index they are referred to as 68 and 68R. French-language editions of several *Bulletins* originally published in English have been issued bearing the same numbers as the English editions; although listed herein, the French editions are not indexed separately because their subject matter corresponds to that of the English editions though page-number references may vary slightly.

An exception to the 1964 cutoff date for publications covered in this present Bulletin has been made in the case of Bulletin 155 (published in 1966). It is listed and indexed for a reason explained later.

This is a continuing series.

4. Canadian Fauna Series

(a) *Canadian Atlantic Fauna* (listed on page 477; indexing abbreviation: AF)

This series began in 1921. Five parts, numbered 3a, 9b, 10m, 10n, and 12d,e,f, appeared at irregular intervals, though not in that order, to the last one in 1948. This series has been discontinued.

(b) *Canadian Pacific Fauna* (listed on page 477; indexing abbreviation: PF)

This series began in 1937. Six parts, numbered 1a,b,c,d, 1e, 1f,g, 9b(1), 9b(2), and 10e, appeared at irregular intervals, though not in that order, to the last one in 1955. This series has been discontinued.

5. Progress Reports

There have been three series, two of which, (a) and (c) below, underwent several slight changes in name when the name of the Board changed in 1937 and as the number of names of the issuing Board establishments on the two coasts altered over the years.

(a) *Progress Reports of FRB Atlantic Coast Stations* (listed on pages 478–495; indexing abbreviation: PRA)

Commencing with No. 1 (in January 1931) issues appeared at irregular intervals until the series was discontinued with the August 1962 issue, No. 73. Each issue contained several articles and usually some news items.

(b) *Progress Reports of the London, Ontario, Biological Station and Technological Unit* (listed on pages 495–496; indexing abbreviation: PRC)

This series commenced with No. 1 in September 1959 and concluded with No. 2 in May 1961. A series of *Circulars* (listed on pages 523–524, indexing abbreviation: CCG), each containing several articles, as did these two issues of the *Progress Reports*, has superseded this series.

(c) *Progress Reports of FRB Pacific Coast Stations* (listed on pages 496–522; indexing abbreviation: PRP)

Commencing with No. 1 (in 1929) issues appeared at irregular intervals (about quarterly for most years) until the series was discontinued with the June 1962 issue, No. 114. Each issue contained several articles and usually some news items; pagination was separate for each issue except for the following annual groups of issues in which the pagination was continuous throughout each group: No. 62–65, 66–69, 71–73, 74–77, 78–81, 82–85, 86–89.

6. Circulars

Thirteen series of *Circulars*, plus a similar series of *Industrial Memoranda* and a series of oceanographic *Bulletins* that were, respectively, superseded by two *Circular* series without break in their numbering, were initiated at various times since 1935 from Board establishments, or in one case (the series of fish inspection laboratory *Circulars*) from the Canada Department of Fisheries Halifax Fish Inspection Laboratory in collaboration with the Board. Each issue deals with a specific topic. Some of these series have been discontinued. Since the names and nature of several of the series changed occasionally, instead of describing each series here, a note concerning such changes is given when necessary at the head of their listings on pages 523–543; the indexing abbreviations are also shown there, and at the end of each list it is stated whether the series is still being used.

7. Miscellaneous Special Publications (listed on page 544; indexing abbreviation: MSP)

Seven brochures or leaflets issued by the Board or its Stations are included in this group since they do not warrant listing in separate series. (See the note at the beginning and conclusion of their listing.)

8. Bulletins of the Newfoundland Government Laboratory

The following two series, though not strictly Board publications, are included because the Fisheries Research Board of Canada can be considered as the successor in interest to the fisheries research work done by the Newfoundland Government Laboratory prior to 1949 when Newfoundland entered confederation with Canada.

(a) *Newfoundland Research Bulletins* (listed on page 545; indexing abbreviation: NRB)

The 18 consecutively numbered issues appearing between 1932 and 1948 each dealt with a specific topic. The series has been discontinued.

(b) *Newfoundland Service Bulletins* (listed on page 546; indexing abbreviation: NSB)

The 15 consecutively numbered issues appearing between 1935 and 1940 each dealt with a specific topic. The series has been discontinued.

II. NON-BOARD PUBLICATIONS LISTED AND INDEXED IN THIS BULLETIN

9. Studies from the Board's Establishments (listed on pages 547–589; indexing abbreviation: S)

(a) *Studies from the Biological Stations of the Biological Board of Canada* (No. 1–192)

(b) *Studies from the Biological Stations of the Fisheries Research Board of Canada* (No. 193–551A)

(c) *Studies from the Stations, Units and Oceanographic Groups of the Fisheries Research Board of Canada* (No. 552–775)

(d) *Studies, Fisheries Research Board of Canada* (No. 776–885)

These *Studies*, numbered consecutively throughout the above three changes in name of the series, consist of separates or reprints of many of the scientific articles, reports, etc., dealing principally with work done at Board establishments but published in media other than the Board's own publications. Collection of these into a series only began in 1919. Until No. 308 the number of copies secured was small and no general distribution was made. Beginning in 1950 variable numbers of issues were collated in annual bindings for selected free distribution by the Board only. The bindings were as follow: No. 309–315 (1950), 316–326 (1951), 327–341 (1952), 342–369 (1953), 370–395 (1954), 396–425 (1955), 426–466 (1956), 467–511 (1957), 512–551A (1958), 552–586 (1959, issued in 1960), 587–634 (1960, issued in 1961), 635–688 (1961, issued in 1962), 689–775 (1962, issued in 1963), 776–817 (1963 Part 1, issued in 1964), 818–860 (1963 Part 2, issued in 1964), 861–885 (1964 Part 1, issued in 1965). No. 885 is the latest one covered in this Bulletin; the series and bindings continue.

Copies of individual or bound *Studies* are not for sale or available from the Queen's Printer. The articles can be consulted in the original publications or in sets of the *Studies* deposited by the Board in many Canadian libraries. A complete or nearly complete set is available for reference at most of the Board's establishments, plus a reserve stock of many at the Board's headquarters in Ottawa.

10. Studies Supplement (listed on pages 590–647; indexing abbreviation: SS)

The 1416 items do not belong in any established Board series. They are herein listed for the first time chronologically by number, and indexed as a series. Items No. 1 to about No. 80 may be looked upon as "Studies" published before the Board's series of collected *Studies* was initiated in 1919, and from about No. 80 on they may be considered as "Studies" that were omitted from the *Studies* (see II.9).

When the author was asked to include the listing and indexing of such publications, the intention was that this should represent principally a "supplement" to the listing and indexing of the *Studies* series to cover the omissions just mentioned, and that it should also cover some articles and reports of special interest to the Board's work though published by persons having little, if any, connection with the Board. The original intention for a rather wide coverage in the latter category was later narrowed down to articles published since 1900. Even so, in the course of choosing these items from the sources mentioned below under V, it proved difficult to decide which should be included and which might be omitted. Among the criteria used for making a choice were: whether the author(s) were (or are) connected with the Board as members, staff, voluntary workers, etc.; whether there was an acknowledgment of financial or other assistance from the Board (e.g. laboratory facilities, collection or donation of specimens, identification of specimens, personal participation). Some items having a rather tenuous connection with the Board, but of special interest to its work, have been included at the risk of omitting others perhaps equally eligible for inclusion. It is hoped that the difficulty of making such choices, in which the author was assisted by several well qualified persons, will be appreciated by those who may consider certain items should have been excluded and additional items included.

III. BOARD PUBLICATIONS LISTED BUT NOT INDEXED IN THIS BULLETIN

11. Annual Reports (listed on pages 648–649)

As shown in their listing, printed official *Annual Reports* of the Board's work under its twice-altered name were first issued for the years 1925, 1926, 1927, and the fiscal year 1928–29, as appendixes in the printed *Annual Reports* of the Fisheries Branch, Canada Department of Marine and Fisheries; commencing with a report for the fiscal year 1929–30, followed by ones for calendar years from 1930 to 1955 and fiscal years from 1956–57 to 1963–64, the Board published its own separate *Annual Reports*. These contain summaries of investigations, lists of Board members, staffs and publications, and other pertinent information concerning the year reviewed. They are not indexed herein because substantially all the scientific results which they summarized are published more fully in one or more of the types of publications just described.

Some reports of the nature of annual reports of Board work prior to 1925 will be found listed in the *Studies Supplement* and are referred to in the index under several of the headings commencing with the word "Station" though their contents are not subject-indexed under other headings. (Board publication of a condensed form of *Annual Report* and a separate fuller biennial *Review* has now supplanted the former type of *Annual Report*. Those for 1964, published in 1966, are not listed or indexed herein; *see* the list of publications and index at the back of Issue No. 12 of the 1966 Volume 23 of the Board's *Journal*.)

IV. BOARD REPORTS AND SERIES NOT LISTED OR INDEXED IN THIS BULLETIN

12. Manuscript Reports (Biological Series; Technological Series; Oceanographic and Limnological Series)

These typewritten or otherwise reproduced unpublished reports are prepared mainly for internal Board use and are not available for general distribution. Titles of those issued each year (to the end of 1963) are listed in the Board's printed *Annual Reports* or (for 1964) in the Board's *Review* for 1964.

13. Canadian Oceanographic Data Centre, Data Record Series

These unpublished preliminary reports constitute repositories of relatively large amounts of data which should eventually form the basis of publications. Numbers 2–20 dated 1964 are listed in the Board's 1964 *Review* published in 1966.

V. SOURCES OF THE LISTS OF TITLES IN THIS BULLETIN

The lists of titles of the publications described earlier under I.1–6, I.8, II.9 and III.11 were compiled from the lists for 1901–54 given in Bulletin 110, supplemented from various readily available sources, including the publications themselves, to cover publications issued from 1955 to the latest appearing in 1964 in time to be included herein. A number of previously reported typographical and other errors occurring in the titles, authors' names, and the references, as well as others noted in the course of this compilation, have been corrected.

Compiling the list of titles for inclusion in the *Studies Supplement* (II.10) involved extensive searches by the author. Lists referenced under the heading "Publication lists" in the present Index, library files of numerous scientific and trade journals known to publish articles pertaining to the Board's work, several sets of card references, and other sources, were examined for titles of non-Board publications *not* included in the *Studies* but probably qualified for inclusion in the *Studies Supplement*. Particularly helpful was Dr W. E. Ricker's assistance in examining some of the files of journals and in loaning his extensive card file.

Reasonable care was taken to avoid including the listing of articles or excerpts from the Board's own publications often copied in trade journals with editorial changes in the title and text, and sometimes not showing the name of the original author. The alterations some of these had undergone made identification with the original source difficult. Some trade-journal publications of complete or abridged copy from Board printed *Annual Reports* were included because, as mentioned under III.11 above, those *Reports* are listed but not indexed herein and the information copied in the trade journal might not otherwise become indexed. From these and other considerations it is realized that the information in certain items included in the *Studies Supplement* is practically duplicated in other items of this series, or in one or more of the series listed.

This *Studies Supplement* is not a continuing series, since all important Board contributions published in other than the Board's own publications are being included in the continuing *Studies* series.

VI. COMPILATION OF THE INDEX IN THIS BULLETIN

The index portion of Bulletin 110 and the other indexes referred to under the heading "Indexes to Board Publications" in the present Index formed a valuable basis for much of this Index and for planning the additional indexing required for the listed publications not already indexed for this purpose up to the end of 1964. However, those existing indexes had been compiled by various people (including the present author) at intervals over 20 years and differed considerably in style, choices of subject headings and degree of detail, thus necessitating some revision. Certain headings had become obsolete, unsuitable, or too general; changes in scientific and or common names of many organisms had occurred; some subjects formerly indexed under general headings required division under two or more headings owing to increasing diversification and specialization of the Board's investigations. Moreover, recent advances in fields such as fish population dynamics, biochemistry of living organisms, also physical oceanography, have led to new terminologies requiring new subject headings under which some useful older references might now more appropriately appear if complete re-indexing of the early publications were undertaken. But complete re-indexing was not considered justifiable in the planning of this Index, so compromises were effected as mentioned below with some remarks that may aid in its use.

(a) *Designation of publication series, and volume, series issue, and page numbers.* When under subject or author headings in the Index section of Bulletin 110 there were two or more volume or series-issue references to the same publication series, the abbreviation for that series was repeated in front of each reference. The series abbreviation is now shown only for the first reference, and the volume or series-issue numbers are in bold type to make them readily distinguishable from any page numbers shown. This is particularly necessary where for some topic the references may be to the whole or only certain pages of the publications. For example, B **14**: 3, 16, **30, 52** (topic) implies that information about that topic will be found on pages 3 and 16 of Bulletin 14 and in Bulletins 30 and 52 as a whole.

Arabic numerals are used even when Roman numerals were used for volume of series designations on the publications themselves. However, Roman numerals are retained for designating the two Fascicles of the 1911–14 *Contributions*: C **1911–14(I)** and C **1911–14(II)**, also for non-numbered, e.g. J **5**: (i), or Roman-numbered, e.g. B **59**: v, preliminary pages on which certain obituaries, forewords, etc., appear.

(b) *Abbreviations.* A list of abbreviations is given separately on pages xvii–xviii for convenience. The abbreviations "Atl." and "Pac." are used except in titles or subject headings. "Pac." and "B.C." are sometimes used synonymously; "Atl." is frequently used instead of the lengthy expression "Canadian Maritime Provinces, eastern Quebec, Newfoundland with Labrador" and for their Atlantic coasts.

(c) *Descriptive words after references.* References under many but not all subject headings in Bulletin 110 were followed by a parenthetical word or expression ("hint") to aid the reader in relating the referenced matter to the subject heading. No hints were given with references under author headings. In the present index such hints are given after *all* references. The author has in some cases retained the hints used in Bulletin 110 and the other indexes incorporated herein. In some cases he has altered or amplified them; in all cases where they were lacking, and also in his new indexing, he has supplied them.

For brevity, many ungrammatical or laconic expressions have purposely been used in these hints, some of which require the subject heading being mentally read into them. Furthermore, because some of the publication series (*Progress Reports*, *Circulars*, *Fauna* series and the Newfoundland *Bulletin* series) contain mainly regional information, unless otherwise stated the hints with the references to those series are to be understood as implying that the subject matter is related to the region stated in the name of the series.

(d) *Corrections.* Corrections to articles in the Board's publications have occasionally been published in the *Journal* and *Progress Reports.* An innovation in this Index is the insertion in the affected references of a reference to where such corrections were published. Corrections in the form of separate erratum slips have not been so referenced as there is no concise way of doing this in an index.

The Editorial Division of the Board in Ottawa will appreciate its attention being drawn to any errors noted in this index.

(e) *Cross-referencing: "see" and "see also."* The remarks here serve to introduce the explanations in the following headings of this section. As mentioned above, in the first paragraph under VI, the consolidation of several existing indexes with the new indexing introduced difficulties owing to the varying types of subject headings and degrees of detail whereby particularly the early publications were indexed. It therefore became necessary to use herein many subject headings followed by "*see*" or "*see also*" and sometimes an explanatory note. This may be inconvenient or even frustrating to the user of this Index but it is hoped it will be helpful in locating or suggesting other headings under which desired information may be found.

(f) *Indexing of the Studies Supplements.* Because of difficulty of access to some of the journals, reports, etc. (particularly foreign ones) listed in this series, many of the items had to be indexed from their titles alone or from card files containing some information about their contents. Consequently, there is some lack in degree of detail whereby such items have been indexed, particularly in respect to the indexing of specific organisms as mentioned under (g) and (h) below.

(g) *Degree of detail in indexing fauna and flora.* For publications wherein only a *few* species are described or used in the investigation, entries are given for each under its common name, if feasible. When there is no generally accepted common name the entries are under the scientific name or under a more general classification. Species mentioned in an author's description or discussion of investigations other than his own are not included in the indexing of that author's own publication.

When *many* species are mentioned in long checklists or general surveys of a region's fauna or flora, the species are not individually indexed. References to such lists are given under general headings such as Fauna; Flora; Distribution; Fishes, lists of; or the name of the pertinent region or body of water. Exceptions are cases such as Board Bulletins No. 68, 68R, 155, and certain other publications such as Studies Supplement No. 1208 that give full recent descriptions of all fishes known in certain regions of Canada; each species described is indexed herein.

The references shown under the name of a given species are not necessarily all the references to that species. In addition to the general headings just mentioned, headings such as the Order, Sub-order, or Family, to which the species belongs should be consulted, as well as certain headings for the plural common name of the species, e.g. Salmons; Whales; Flatfishes; Clams. Such plural-name headings have also been used for indexing closely related species not mentioned by their individual names in the publication.

(h) *Nomenclature used in indexing fauna and flora.* It was recommended to the author that Canadian Pacific coast fishes should be indexed under their common names as chosen for use in FRB Bulletin 68R and that their scientific names and any widely used variations of their common names used therein should be cross-referenced to the chosen common names. Nomenclature used in the present Index for Canadian Atlantic coast fishes follows that in Bulletin 155 (published in 1966, but listed in this book) and the same remarks above about cross-referencing apply. (Only the English-language common names have been indexed: the Bulletin shows the French-language names also.)

For nomenclature of British Columbia freshwater fishes the author chose the publication listed as Studies Supplement No. 1208; for that of other freshwater fishes the 1960 second edition of the American Fisheries Society's Special Publication No. 2, "A list of Common and Scientific Names of Fishes from the United States and Canada," was consulted. All scientific names have been cross-referenced to the common names.

However, for some fishes referred to in articles published before the four above-mentioned recent authoritative reference works appeared, authors used nomenclature (particularly scientific names) in current use at their time of writing but now obsolete. Moreover, the nomenclature recommended for use in this Index differs in some cases from that recommended by the American Fisheries Society 1960 publication mentioned above. Hence, the author was asked to indicate some of the older or alternative names by cross-referencing them to the common-name heading now used and show them after this heading thus: Sculpin, spinynose (*Radulinus taylori*) (*Asemichthys taylori*; Taylor's sculpin).

For non-fish fauna, particularly marine mammals and economically important aquatic invertebrates, and also for flora, particularly marine flora, the most recent Board publications dealing with these were consulted for up-to-date nomenclature and the above system of cross-referencing is used.

Some common names officially include a geographical adjective such as "Pacific" or "Atlantic," shown in subject headings as "Halibut, Pacific" and "Halibut, Atlantic"; but some different species indigenous to different regions have the same common name without any official adjective. For the latter the author has indicated their habitat by showing it in the headings thus: "Clam, razor (Pacific)" and "Clam, razor (Atlantic)."

When species have no common name, as in the case of many bacteria, plankton forms and aquatic invertebrates, references are given under their scientific names or under generalized subject headings such as some mentioned under (g) above.

(i) *Life histories, morphometry, movements, feed.* These and other similar biological characteristics of organisms are so often mentioned in publications dealing principally with some other study of the organisms that it has not been considered feasible to include entries under such headings each time they are mentioned. Entries under headings like these usually refer to publications featuring such subjects. For instance, the various characteristics of the several hundred different fishes described in Bulletins 68R and 155 are not indexed under the names of these fishes or under headings such as the above. The author could not find a satisfactory criterion for indexing under "Predation" as distinct from "Feed studies"; most carnivorous animals obtain their normal sustenance by predation.

(j) *Geographical regions and place names.* Only names of well-known geographical localities or of places where considerable or a special investigation has been conducted, are accorded a subject heading. Even so, the entries under most place names, Canadian Provinces, geographical regions, and bodies of water are not exhaustive of all references thereto; many additional references will be found associated with entries under other types of subject headings and under author headings.

(k) *Arctic and subarctic.* When used either as nouns or adjectives in this Index these terms refer principally to the Canadian regions, though in some cases parts of Alaska, Greenland, and Siberia are implied. It was found that authors vary in their application of these terms in respect to the Arctic Circle so sometimes no definite distinction could be made when assigning entries under the heading "Arctic, Canadian" as compared to the arctic–subarctic headings "Northwest Territories" and "Yukon." For use of these terms in connection with oceanography, see (l) just below.

(l) *Hydrography and oceanography.* No references have been placed under the subject heading "Hydrography," which merely indicates a few other general headings under which hydrographic references will be found. References to *marine* hydrography have in general been indexed under "Oceanography." Others will be found under some of the indicated headings, under more specific headings such as Physiography; Currents; Estuaries; Models, hydrographic; Tide and tidal effects; Waves; and under names of specific localities and waters.

The nine subject headings commencing with the word "Oceanography" allocate references under eight marine geographic regions in seven of which almost all the Board's oceanographic investigations have taken place, plus the heading "Oceanography, general" for references to methods and investigations applicable to oceanography in general. The Oceanography coastal region headings signify from the mainland to about the Continental Shelf. The allocation of references between the headings "Oceanography, arctic" and "Oceanography, subarctic" has been chosen somewhat arbitrarily (see Study No. 326); notes after those headings indicate approximately what waters are covered by each. Authors' varying demarcation of the boundary between the northern "open" and the subarctic waters of the Pacific Ocean has been ignored for this indexing of oceanographic references to these waters; the Arctic Circle crossing Bering Strait has been chosen as a boundary between them for this purpose.

The notation "*see also* Oceanography" after most of these Oceanography index headings implies see the other appropriate headings commencing with "Oceanography," for when an investigation dealt with two contiguous areas or merged from one to the other (e.g. coastal waters to open ocean) the reference is either included under the heading of principal coverage or is given under the two appropriate headings.

In addition to the entries under the nine "Oceanography" headings, many other references to oceanography and hydrography will be found under numerous other subject headings including the following (for brevity only the first word of these is shown below; the appropriate full headings will be readily distinguishable):

Atlantic
"Calanus"
Canadian
Currents
Estuaries
Homing
Heat
Hydrodynamics
Indicator
Inlet
International
Lighthouse
Migration
Models
Nutrients
Ocean
Oxygen
Pacific
Physiography
Pollution
Salinity
Sea water
Temperature
Tidal
Tide
Transparency
Turbidity
Waves
Weather
Weathership

also specific marine localities and bodies of water. (See also the list of titles in the series of Circulars of the Pacific Oceanographic Group listed on pages 533–539 and the Index subject heading "Bibliographies.")

(m) *Biochemistry; fat, oil, and lipid chemistry.* The increasing ramifications of aquatic biochemistry, particularly in respect to nucleic acid derivatives, hormones, etc., also the growing interest in complex lipids, fatty acid structure, glyceride fatty acid distribution, and fat metabolism, which has largely replaced the earlier interest in aquatic animal oils as principally glycerides and vitamins for commercial purposes, have led to the assignment of many references in the previous indexes to new subject headings. The present subject headings: Acids, fatty; Acids, nucleic; Biochemistry; Composition; Fats and oils, give notes and cross references that will assist in locating other allied subject headings.

(n) *Quality; spoilage.* The subject heading "Spoilage" used in the other indexes for many references to lack of freshness in fishery products has not been used for any entries in this Index. After reviewing all references pertaining to freshness, staleness, and actual spoilage in the previous indexes, the author chose "Quality" as a more suitable subject heading because most investigations dealt with the gradual transition of the product from a state of freshness to that of spoiled or putrid.

(o) *Processing; products.* The entries under the headings "Processing" and "By-products" and the cross-references indicated with those headings will suggest some, but by no means all, of the other subject headings under which references to processes and products will be found. Most such references to processing and products are also given under the names of the fishes and other organisms whose products have been investigated. For many of the commercially important organisms there are two separate subject headings for the common name, e.g. "Herring, Atlantic (biology)" and "Herring, Atlantic (products)"; the "(biology)" indicates that a second heading follows in such cases.

NOTE: To serve as annual supplements for this Bulletin, the former type of annual indexes and tables of contents for the Board's Journal alone, given at the end of the concluding issue of each volume from 1955 to 1964, was expanded commencing with the 1965 Volume 22 to cover all Board publications and Studies appearing during the year in time to be listed and indexed for the year. It should be noted that the 1965 and 1966 annual lists of titles and indexes cover a few Board Circulars published in 1964, a few Studies published in 1961 and 1962, and numerous Studies published in 1963 and 1964, details of which were not available before the cutoff date of December 1964 for their listing and indexing in this Bulletin.

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Thanks are also expressed to the several Board directors and members of their staffs whom the author harassed by correspondence in order to obtain certain data and adjudications concerning names of authors, nomenclature of organisms, and other details.

ABBREVIATIONS USED IN THE INDEX

BOARD PUBLICATIONS

(For the *Bulletins* (B) and most other series listed below B, those prior to 1938 were issued under the name of the Biological Board of Canada; those from 1938 onward were issued under the name of the Fisheries Research Board of Canada. Not all minor changes in names are indicated. Discontinued series are indicated by an asterisk.)

C—*Contributions to Canadian Biology** succeeded by *Contributions to Canadian Biology (New Series)** succeeded by *Contributions to Canadian Biology and Fisheries**

J—*Journal of the Biological Board of Canada** continued from 1938 as the *Journal of the Fisheries Research Board of Canada*

B—*Bulletins* (B68R refers to the 1961 revised (second edition) of Bulletin 68 published under the same title in 1949)

AF—*Canadian Atlantic Fauna**

PF—*Canadian Pacific Fauna**

PRA—*Progress Reports of the Atlantic Coast Stations**

PRC—*Progress Reports of the Biological Station and Technological Unit, London, Ont.** (now at Winnipeg, Man.)

PRP—*Progress Reports of the Pacific Coast Stations**

CAG—*Circulars*, Arctic Unit, Montreal, Que. (now at Ste. Anne de Bellevue, Que.)

CCG—*Circulars*, Biological Station and Technological Unit, London, Ont. (now at Winnipeg, Man.)

CFI—*Circulars*, Fish Inspection Laboratory, Halifax, N.S.* (Canada Department of Fisheries)

CGR—*Circulars*, Technological Station, Grande-Rivière, Que.*

CHO—*Circulars*, Technological Station, Halifax, N.S.*

CHN—*Circulars* (New Series), Technological Station, Halifax, N.S.

CJG—*Circulars*, Biological Station, St. John's, Nfld.

CNG—*Circulars* (General Series), Biological Station, Nanaimo, B.C.

CNS—*Circulars* (Satistical Series), Biological Station, Nanaimo, B.C.

COF—*Circulars* (Oyster Farming Series), Biological Station, St. Andrews, N.B.*

CPO—*Circulars*, Pacific Oceanographic Group, Nanaimo, B.C.* (early issues bore the name Bulletins)

CSG—*Circulars* (General Series), Biological Station, St. Andrews, N.B.

CSS—*Circulars* (Statistical Series), Biological Station, St. Andrews, N.B.

CVI—*Industrial Memoranda*, Technological Station, Prince Rupert, B.C. (later Vancouver, B.C.)* (20 issues, continued as the following series)

CVG—*Circulars*, Technological Station, Vancouver, B.C.

MSP—Miscellaneous Special Publications (not a collected series)

NON-BOARD PUBLICATIONS

NRB—*Research Bulletins*, Newfoundland Government Laboratory, St. John's, Nfld.*

NSB—*Service Bulletins*, Newfoundland Government Laboratory, St. John's, Nfld.*

S—*Studies* (reprints; groups bound annually for distribution by the Board)

SS—Studies Supplement (not a collected series)*

OTHER ABBREVIATIONS

The Provinces and Territories of Canada are abbreviated to:

Alta. (Alberta)
B.C. (British Columbia)
Man. (Manitoba)
N.B. (New Brunswick)
Nfld. (Newfoundland)
N.S. (Nova Scotia)
N.W.T. (Northwest Territories)
Ont. (Ontario)
P.E.I. (Prince Edward Island)
Que. (Quebec)
Sask. (Saskatchewan)
Yuk. (Yukon)

Major areas of certain geographical regions (including oceans) are designated by N (north, northern), S (south, southern), E (east, eastern), W (west, western), NE (northeast, northeastern, etc.); also by Atl. (Atlantic), Pac. (Pacific); L. (Lake); R. (River).

Certain international commissions are commonly referred to as: ICNAF (International Commission for the Northwest Atlantic Fisheries) and INPFC (International North Pacific Fisheries Commission).

In the Index references, "re" is frequently used to imply "in relation to," "in connection with," and similar meanings; "vs." to imply such meanings as "in contrast to," "as opposed to," and "as compared with."

FRB RESEARCH ESTABLISHMENTS

Fisheries Research Board of Canada
Biological Station
P.O. Drawer 100
Nanaimo, British Columbia
[Including Pacific Oceanographic Group]

Fisheries Research Board of Canada
Research Laboratory
6640 N.W. Marine Drive
Vancouver 8, British Columbia

Fisheries Research Board of Canada
Freshwater Institute
501 University Crescent
Winnipeg 19, Manitoba

Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

Fisheries Research Board of Canada
Marine Ecology Laboratory
Bedford Institute
P.O. Box 1006
Dartmouth, Nova Scotia

Fisheries Research Board of Canada
Oyster Unit
Ellerslie, Prince Edward Island

Fisheries Research Board of Canada
Arctic Biological Station
P.O. Box 400
Ste. Anne de Bellevue, Québec

Fisheries Research Board of Canada
Research Laboratory
P.O. Box 429
Halifax, Nova Scotia

Fisheries Research Board of Canada
Technological Station
Grande-Rivière, Québec

Fisheries Research Board of Canada
Technological Unit
Cable Building
St. John's, Newfoundland

Fisheries Research Board of Canada
Biological Station
St. John's, Newfoundland

INDEX

A

Abalone (*Haliotis kamtchatkana*)
PRP 45: 18 (canned smoked); **114:** 9 (B.C. commercial)
S 245 (description; edibility); **844** (sperm deoxyribonucleic acids)
SS 102 (report on B.C.); **134** (unutilized resource)

Abbott, Eileen (Bolman)
SS 329 (dogfish blood vascular system)

Abitibi, Lake (Ont.)
SS 564 (higher aquatic plants)

Abnormalities (of organisms) (*see also* Albinism)
C 2: 129 (skate thyroid)
J 15: 235 (from salmon eggs anoxia); **18:** 283 (whitefish vertebrae); **21:** 413 (asymmetric cod otolith pair), 1547 (pike accessory fin)
NRB 18: 3 (lobster)
S 460 (skate pectoral fins); **485** (crab appendages); **503** (from salmon eggs anoxia)
SS 573, 574 ("three-eyed" haddock); **814** ("reversed" flounders); **839** (very long-finned trout); **945** (carp)

Absorption Spectra (*see* Pigment)

Abstention (*see* International Commissions)

Abundance (of fish and marine mammals) (*see also* Catch; Catchability; Catches; Distribution; Population studies; Statistics; *also* names of individual fishes and marine mammals)
J 3: 108, 145, **7:** 403 (B.C. herring); **4:** 69 (rainbow trout); **5:** 43 (re catch per unit effort), 227 (Atl. salmon and birds); **6:** 158, 267, **8:** 453, **9:** 462, 485, **10:** 293, **12:** 451, **13:** 695 (Pac. salmons); **8:** 281, **10:** 459, **12:** 447, **15:** 19, **17:** 33 (estimation & estimation methods); **8:** 383, **12:** 618 (Marit. trouts); **10:** 211 (regulation in nature theory); **11:** 284 (whitefish), 362, **17:** 453 (stream Atl. salmon); **11:** 559 (re reproduction); **12:** 85 (re catch fluctuations), 147, **13:** 613 (smallmouth bass; correction on **12:** 942); **12:** 238 (eels & other lake fishes), 499 (Skeena R. drainage freshwater fishes); **13:** 327 (re competition), 357 (re Pac. fishes yield), 599 (maskinonge), 647 (lemon sole), 843 (Labrador arctic char); **15:** 5 (sea-lions); **18:** 463 (N.S. brown-water lake); **20:** 435 (epizootic effect on herring), 685 (temperature re zooplankton); **21:** 661 (lobster larvae)
B 21: 9, **57:** 21 (Atl. salmon); **47:** 31, **67:** 15 (B.C. herring); **69:** 11 (haddock); **70:** 6 (N.B. smelt); **71** (Atl. halibut); **98** (beluga); **105** (Atl. cod); **107** (Great Slave Lake); **108** (Nfld. Danish-seine exploration); **109** (Nfld. longlining exploration); **119** (estimation methods)
PRA 2: 14 (temperature re Passamaquoddy fishery), 16, 18 (periodicity of Atl. salmon)
PRP 58: 17, **93:** 13, **109:** 12 (herring); **107:** 22 (post-larval Dungeness crab); **110:** 13 (dogfish); **113:** 13 (NE Pac. phytoplankton)
CNG 37, 42, 46, 50, 56, 60, 69, 70, 71, 72 (B.C. herring & its spawn)
S 84, 237, 339, 654–658, 713, 769, 859 (Pac. salmons); **175** (Atl. salmon); **237** (kokanee); **250** (rainbow trout); **264** (young pilchard); **266** (depletion); **267** (future prospects); **270** (Ont. salmon); **282** (young from few adults); **292** (assessing populations); **293** (Europe); **294** (management effect); **295** (production computation); **296** (re catch per unit effort); **300** (Atlantic); **340** (predator-prey relations); **359** (mortality effect); **363, 397, 411, 423, 464, 500** (B.C. herring); **452, 453** (B.C. fisheries resources); **767** (determination methods for ringed seal)
SS 651 (Atl. salmon re year classes)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Abundance (of invertebrates) (*see also* Distribution; *also* names of individual organisms)
C 8: 357 (diatoms)
J 4: 33 (net plankton); **5**: 84 (starfish), 138 (pond Cladocera); **6**: 119 (bacteria), 291, **17**: 553 (lobsters); **7**: 363 (*Odontosyllis*); **10**: 211 (theory); **12**: 797 (scallops); **14**: 693 (squid near Nfld.), 831, 975 (codworm by host and locality)
B 62: 30 (Dungeness crab)
PRA 49: 14, **54**: 12 (Digby scallops); **71**: 21 (shellfish resource stocktaking)
S 32 (diatoms)
SS 599 (softshell clam)

Acanthocephala, parasitic (spinyhead worms)
C 6: 453 (in Ont. whitefish)
J 7: 187 (in Great Bear L. trout); **8**: 207 (in Great Slave L. fishes); **11**: 267, **12**: 116, **13**: 489 (in B.C. marine mammals; correction on **16**: 385); **11**: 673 (in B.C. freshwater fishes); **15**: 983 (in Pac. salmons)
B 93: 37 (in B.C. harbour seals)
S 202 (in B.C. salmon and flounder); **405** (*Corysonoma* synonomy)

Acara, Huseyin Altan
J 21: 397 (vertical transport velocity in sea)

Acarina (parasitic)
J 11: 267, **13**: 500 (in marine mammals)

Acclimation (*see also* Temperature, reactions to; Salinity, reactions to)
J 12: 387 (trout to reduced dissolved oxygen; correction on **12**: 942); **13**: 247 (lobsters to temperature, salinity, oxygen); **15**: 1189 (scallops to temperature), 1345 (lobsters to temperature); **18**: 401 (fish to seawater)
PRA 62: 24 (lobsters to temperature)
S 503 (sockeye to environmental stresses)
SS 7 (marine fishes to freshwater)

Acetic acid (*see also* Acids, volatile; Pickle; Preservatives; Quality)
J 5: 197 (as fish spoilage test)
PP 36: 7 (preservative for livers & intestines)
S 380 (constituent of marine worm)

Achromobacter (*see also* Bacteria)
J 13: 619 (re *Pseudomonas* as spoilage cause); **14**: 617, 775 (in chilled fillets)
PRP 96: 11 (indigenous in marine forms)

Acid (*see* following types; *also* names of individual acids; *also* Preservatives)

Acid value of oils
B 89: 361 (definition)
PRP 15: 5, **18**: 5 (of salmon oils)

Acids, amino (*see also* Protein headings; Proteins)
J 4: 363 (histidine in mackerel & tuna), 412 (breakdown during cod spoilage); **7**: 51 (methionine & cystine in Pac. fishes), 513 (of Pac. fishes tissues, meals & stickwaters; in Table III multiply all nitrogen percentages by 10 except for stickwater), 563 (of Pac. fishes liver, viscera, meals, stickwaters, scales); **13**: 560 (quality index for cod fillets); **14**: 41 (in sewage, soils, freshwater & marine waters, seston & sediments), 772 (cysteine as enzyme substrate), 775 (odour production by *Pseudomonas* growing on); **16**: 21 (bacterial production of odours from), 685 (in condensed herring solubles), 747 (chemistry of, in cod flesh); **17**: 125, 323 (nitrogen, in blood and tissues of maturing Pac. salmons); **18**: 85 (index, of fish flour and meals), 501 (of cod, etc. tropomyosin), 851 (alpha, in salted cod), 1001 (in marine phytoplankters cells); **19**: (of cod & haddock muscle extracts): **20**: 1 (of codworm), 729 (of representatives of 8 bacterial genera); **21**: 641 (of bacteria. re taxonomy)
PRA 67: 29 (in fish flour); **72**: 19 (in salt cod pickle); **73**: 10 (of skin hydrolysate)
PRP 69: 66, **73**: 50, **77**: 97 (of fishes tissues, meals & stickwater); **87**: 44 (role of essential, in chick feed); **96**: 16 (role of essential, in ruminant cellulose digestion); **104**: 16 (in stored chilled salmon)
CVI 11, 17 (in various fish flesh & products)
CVG 24 (of Atl. & Pac. herring meals); **26** (of B.C. whole herring meal)
S 377 (re ruminant cellulose digestion); **444** (L-serine as salmon repellent); **476** (new adenyl-succinic acid derivative): **486** (inhibition of bacteria growth); **531, 589** (paper chromatography separation); **858** (of seawater suspended algae)
SS 1272 (re fish flavour)

Acids, dicarboxylic
S 629 (from ester decomposition); **652, 662** (synthesis of)

Acids, fatty (*see also* Composition, chemical Esters; Hydrogenation; Glycerides; Lipids; Oils and fats; Spermaceti; *also* other related subjects)
J 4: 59 (of pilchard oil); **5:** 276 (mould suppressing); **6:** 109 (nutritionally essential in fish oils); **13:** 132, 575, **14:** 632 (free, in Atl. fish fillets); **14:** 46 (in sediments, seston, sewage, soils, fresh & marine waters), 641 (free, in frozen lobster meat); **15:** 555 (of salt cod phospholipid); **16:** 43, 755, **18:** 143, 483, 495, 893, **21:** 367 (of lipids of various fishes); **18:** 93 (free, in "liquefied" herring); **19:** 169 (free, in Pac. cod & lingcod), 605 (methyl esters from cod oil), 1081 (free, in cod oil); **20:** 89, **21:** 319 (of cod liver oil); **20:** 245 (of bottlenose whale oil), 591 (of capelin oil), 1551 (of saury oil); **21:** 247 (structural homogeneity in marine lipids), 469 (of cod roe), 653 (oxidation by sockeye tissues), 747 (produced by diatom), 841 (of pilchard oil), 1379 (distribution in marine plankton lipids)
B 37: 13, **59, 89** (of marine animal oils; *see* their indexes)
PRA 71: 17 (liberation by cod lipid hydrolysis)
PRP 3: 3 changes in cold-stored fish); **9:** 15 (nature in fish oils); **10:** 14, **19:** 7, **20:** 6, **21:** 18, **28:** 6 (hydrogenation of pilchard oil); **25:** 13 (uses from pilchard oil); **28:** 6 (stearic, in rubber manufacture); **30:** 19 (of pilchard oil); **44:** 4, **45:** 21 (research progress); **75:** 48 (free, in whitefish oil); **93:** 3, **94:** 24 (of herring oil); **97:** 8 (of marine tube worm); **99:** 6 (sockeye offal oil)
CVI 9, 12, 13 (free, in freshwater fish oils)
S 87 (pilchard oil); **150** (cryoscopy & ebullioscopy); **349** (unsaturation re refractivity); **380** (of marine tube worm); **421** (propionic, bacterial oxidation of); **331, 450** (partition chromatography); **662** (ozonolysis of oleic); **832** (oxidation by fish muscle); **707, 721, 799, 838, 847, 861** (gas–liquid chromatography (GLC) of various types); **804, 811** (GLC of methyl esters); **805, 819, 833** (specific distribution in marine lipids); **810** (of harp seal blubber oil); **824, 825** (structural correlation in unsaturated esters); **839** (of harbour seal blubber oil); **840** (of gray seal milk); **864** (animal retention of dietary triglyceride pattern)
SS 926 (synthesis of long-chain); **1174** (cholesterol synthesis inhibition by); **1357** (quantitative GLC)

Acids, humic
J 14: 46 (in sediments, seston, sewage, soils, fresh & marine waters; correction on **14:** 997)

Acids, nucleic (DNA = deoxyribonucleic acid) (*see also* Nucleotides)
J 16: 53, **18:** 505 (in cod tropomyosin); **16:** 421 (in spawning migratory sockeye; correction on **16:** 930); **18:** 349 (salmon enzyme action on)
S 360, 400 (re browning of flesh); **480** (deoxyribose-1:5-diphosphate); **494, 568** (of fish muscles); **517** (review re biochemical significance); **534** (muscle extracts ribonuclease activity); **607** (phosphorylribose enzyme); **818** (traced incorporation of N bases into milt DNA); **823** (DNA of crabs); **844** (DNA of marine molluscan sperms)

Acids, volatile (as quality test)
J 5: 197 (re trimethylamine oxide); **13:** 560 (as cod fillets quality index), 863 (in "bilgy" spoilage); **18:** 851 (in salted cod)
SS 1235 (in salt cod)

Acipenser (Asiatic species) (*see* Sturgeons)

Acipenser brevirostrum (*see* Sturgeon, shortnose)

Acipenser fulvescens (*see* Sturgeon, lake)

Acipenser medirostris (*see* Sturgeon, green)

Acipenser oxyrhynchus (*see* Sturgeon, American Atlantic)

Acipenser stellatus (*see* Sturgeon, stellate)

Acipenser sturio (*see* Sturgeon, American Atlantic)

Acipenser transmontanus (*see* Sturgeon, white)

Ackman, Robert George
J 18: 865, **19:** 605, 1081, **20:** 591, 1551, **21:** 247, 841 (fatty acids of or from Atl. fish oils); **19:** 839, **20:** 89 (air blowing of marine oils); **20:** 245 (bottlenose whale oil); **21:** 319 (cod liver oil fatty acids), 367 (cod flesh fatty acids), 423 ("blackberry" cod), 469 (cod roe fatty acids), 747 (marine fatty acids origin), 1379 (plankton lipids fatty acids)
CHN 7 (air-blown oils as lubricant additives); **11** (ambergris identification); **19** (Board publications on by-products, 1950–63)
S 629 (gas–liquid chromatography (GLC) causing ester decomposition); **662** (unsaturated fatty acids ozonolysis); **697** (determining non-alcoholic impurities in alcohols); **705, 782, 800, 803, 804, 847** (GLC apparatus and techniques); **707, 721, 799, 811, 824, 825, 833, 838, 861, 883** (GLC of marine fatty acids or their esters); **805** (marine lipids fatty acids distribution); **810, 839** (seal blubber oil fatty acids); **833** (GLC of *n*-monoalkenes); **840** (gray seal milk fatty acids); **845** (ethanol as methyl ester hydrogenation solvent)
SS 1357 (quantitative fatty acid GLC)

Acrocheilus alutaceum (*see* Chiselmouth)

Acrotus willoughbyi (*see* Ragfish)

Actin (*see also* Actomyosin; Myosin)
J 16: 243 (isolation from cod muscle); **18:** 505 (in crude cod tropomyosin)

Actinia (*see also* Sea-anemone)
C 1906–10: 33 (N.B.)
SS 43 (*Actiniaria* synonomy); **70** (2 new from B.C.); **220** (*Sagartia luciae* systematic position)

Activity; Exercise; Fatigue (*see also* Speed)
J 12: 917 (effect on blood of various freshwater fishes); **14:** 117, 645, **15:** 36, **16:** 391, **17:** 487 (effect on trout blood: correction on **16:** 386); **14:** 807 (effect on sockeye blood); **15:** 573 (lethal effect for various fishes; correction on **16:** 929), 1345 (of lobsters re temperature); **16:** 95, 429 (effect on troll-caught salmon), 175 (scope for, re environment), 321 (effect on trout); **17:** 125 (effect on spawning salmon); **19:** 409, 619 (effect on trout & salmon); **21:** 133 (cycles in brown trout), 1183 (performance of young sockeye)
S 63 (effect on muscle *p*H); **207** (overexertion lethal effect); **503** (re sockeye environmental stress); **842** (re fish-marking mortality)
SS 737 (re muscle autolysis); **1091** (patterns of yellow perch)

Activity product
S 827 (of ferric hydroxide by turbidimetry)

Actomyosin (*see also* Actin; Myosin)
J 13: 130 (in plaice fillets), 574 (in redfish fillets); **14:** 629 (in frozen cod muscle); **16:** 33 (in fish muscle chemical structure), 43 (re lipid hydrolysis in frozen muscle), 243 (from cod muscle)
S 633 (Atl. cod adenosinetriphosphatase activity)

Adams, James Russell
J 11: 673 (B.C. freshwater fish parasites; correction on **12:** 941)
PRA 37: 14 (Atl. oyster drill)
S 430 (*Salmincola* parasitic on fish heart); 462 (new *Genolinea* parasitic on salmon)

Adams River, B.C. (*see also* Salmon, sockeye *and* subjects pertaining thereto)
SS 1399 (sockeye cyclic dominance)

Adaptation (*see also* Acclimation; Temperature, reactions to; Salinity, reactions to)
J 15: 815 (of salmon retina)

Adductor muscle (*see* Muscle)

Adrenaline
SS 478 (effect on skate blood pressure)

Adsorption (*see also* Chromatography)
B 89 (in processing fish oils; *see* its index)
PRP 36: 14, **46:** 12 (of fish oil components on nascent soaps); **88:** 51 (in processing halibut liver oil for cholesterol); **90:** 14, **95:** 45 (in vitamin B_{12} assays)

Aeromonas salmonicida (*see* Furunculosis)

Aethoprora metopoclampis (*see* Headlight fish)

Agar (*see* Seaweed products)

Agardhiella (red seaweeds)
B 127, figure 21 (*A. coulteri* as B.C. resource)

Agarum (*see* Kelps)

Age; Age composition; Age related to growth (*see also* Age determination; Growth; Marking; Size; Tagging; *also* names of organisms)
C 1917–18: 111 (pollock); **1921**: 28 (Atl. blue mussel)
J 1: 159, **2**: 379, **13**: 219, **17**: 453 (Atl. salmon); **8**: 345, **13**: 547, **16**: 107, **20**: 265 (whitefish); **10**: 326, **13**: 843 (arctic char); **10**: 459, **13**: 672 (lemon sole); **11**: 1 (trout-perch), 171 (yellowtail flounder); **12**: 35 (Pac. albacore), 649 (Pac. herring; correction on **14**: 997); **12**: 839 (Atl. scallop); **14**: 553 (kokanee), 899 (redfish), 992, **15**: 1383, **17**: 773, **21**: 57 (Atl. cod); **15**: 831 (lingcod), 867, **20**: 1371 (sockeye salmon); **15**: 1229, **20**: 1465 (haddock); **15**: 1286 (Atl. halibut), 1313 (Atl. smelt); **20**: 105 (2 dace species), 305 (lobster), 417 (burbot), 435 (Atl. herring), 491 (lake trout), 1284 (pollock), 1397 (bigmouth buffalo); **21**: 139 (marine phytoplankters), 415 (B.C. female sea lion), 597 (re plaice fecundity), 773 (re fur seal reproduction), 905, 1101 (pink salmon), 1051 (Pac. cod), 1101 (chum salmon), 1403 (B.C. pandalid shrimps)
B 1: 20 (plaice); **2**: 13 (lumpfish); **3**: 11 (angler); **4**: 4 (muttonfish); **15** (coho salmon); **21**: 5 (Atl. salmon); **25**: 16 (haddock); **31**: 11 (pink & chum salmon); **62**: 23 (Dungeness crab); **79**: 5 (brook trout); **81**: 2 (walleye; sauger; perch); **84**: 7 (chinook salmon), 15 (steelhead trout); **111**: 103, 121, 139, 153, 165 (Atl. herring); **115**: 22 (bloodworm); **143**: 23, 51, 75 (B.C. herring); **144**: 9, 28 (Atl. smelt)
PRA 68: 20, **70**: 16 (spawning Nfld. salmon)
PRP 18: 10, **24**: 6, **30**: 3, **41**: 10, **42**: 12, **47**: 10 (B.C. herring); **29**: 16, **51**: 3 (coho salmon); **36**: 12 (brown trout); **40**: 17 (eulachon); **44**: 9 (chinook salmon); **46**: 20, **109**: 9 (steelhead salmon); **54**: 9, **97**: 9 (chum salmon); **63**: 35, **87**: 27 (B.C. soles); **75**: 31, **82**: 9, **102**: 16 (sockeye salmon); **99**: 14, **105**: 22 (lingcod)
CAG 4, 5 (harp seals)
CNG 52 (coho & sockeye salmon)
NRB 1: 27, **13**: 5 (Atl. salmon); **6**: 19 (haddock); **14**: 70 (Atl. cod)
S 15 (Atl. blue mussel); **72**: 255 (littleneck clam); **73**: 272 (butter clam); **77, 90, 91, 92, 107, 113, 115, 118, 122, 134, 145, 179, 195, 219, 233, 328, 342, 362, 396, 422, 465, 501** (sockeye salmon, No. 11–25, 36–42 of a series); **146, 285, 327, 343** (B.C. herring); **236, 322** (coho & chinook salmon); **654, 655, 656, 657, 658, 769, 859** (NE Pac. salmon); **731** (redfish)
SS 92, 114, 130, 152, 167, 197, 228, 248, 264, 279, 730, 741, 756, 771, 796, 811, 824, 848, 880, 903 (sockeye salmon, No. 1–10, 26–35 of a series); **180, 181** (Atl. herring); **511, 865, 897, 923** (B.C. herring); **532** (re sockeye salmon maturity); **831** (coho salmon heritability of maturity age); **915** (stratified subsampling for distribution of)

Age Determination (*see also* Marking; Otoliths, age determination from; Scales, age determination from; Shells, age determination from; Tagging; Teeth, age determination from; Vertebrae, age determination from)
J 14: 553 (from lake sturgeon fin rays); **20**: 1489 (from minke whale ear plugs)
B 118: 8 (from ringed seal claws)
PRP 73: 53 (from B.C. dogfish spines)
CAG 2: 5 (from walrus tusks)
SS 216 (of ascidians)

Aggregation (*see* Schooling)

Agonopsis emmelane (*see* Poacher, windowtail)

Agonus acipenserinus (*see* Poacher, sturgeon)

Agonus decagonus (*see* Sea Poacher, Atlantic)

Ahnfeltia (agarophyte seaweeds)
B 127, figure 22 (*A. plicata* as B.C. resource)

Ailmentary tract (*see* Digestibility; Digestive tract; Physiology, digestion)

Air survey (*see* Census; Survey)

Air transportation of fishery products
PRA 42: 10 (live lobsters)
PRP 114: 3 (packaging of fresh fish for)
SS 1194 (live lobsters)

Air velocity (*see* Dehydration; Drying; Storms)

Airdrie, Alta.
C 1921: 161 (diatoms from)

Akpatok Island (*see* Ungava Bay)

Alaria (*see also* Kelps)
B 127, figure 13 (*A. marginata* as B.C. resource)

Alaska
J 13: (Polychaeta); **15:** 625 (air and sea temperatures re fish abundance); **16:** 95 (salmon mortality experiments), 721, **17:** 199 (chinook salmon); **18:** 337 (salmon counting); **21:** 485 (sockeye homing), 1385 (pink salmon spawning beds egg capacity)
B 72: 5, **94** (range overlap with Yukon fishes)
SS 464, 516 (freshwater Algae & Protozoa); **740** (Polychaeta); **1359** (Point Barrow coastal phytoplankton)

Alaska, Gulf of (*see also* Ocean; Oceanography, NE Pacific)
J 15: 855 (drift bottle observations in gyral); **16:** 351 (Chaetognatha), 383 (fishes), 795 (*Sagitta lyra* distribution)
S 722 (distinguishing immature & maturing salmons)
SS 1301 (Canadian salmon tagging)

Albacore (*Thunnus alalunga*) (*Germo alalunga;* longfin albacore; longfin tuna)
J 12: 35, **17:** 221, **18:** 1145 (distribution, age & growth in NE Pac.); **12:** 61 (gonad histology); **20:** 1183 (effect of brine freezing and thawing on muscle)
B 59: 411, **89:** 344, 347 (oils); **68:** 166, **68R:** 224 (full description of B.C.); **155:** 287 (full description of Atl.)
PRP 52: 9 (feed); **71:** 3, **75:** 55, **92:** 6 (fishery); **91:** 10 (canning); **92:** 6 (fishery re sea temperature), 21 (freezing at sea); **101:** 17 (Na & K content of canned); **114:** 19 (storage effect before freezing)
CNG 12 (feed, size, catches); **17, 20, 23** (fishery & biology); **64:** 49 (production capacity)
CSG 43 (description of Atl.)
CVI 17 (vitamins and amino acids of canned)
CVG 27 (seine boat freezing equipment for)
S 453, 851: 52 (B.C. fishery & prospects)
SS 737 (muscle autolysis)

Albacore, autumn (*see* Tuna, yellowfin)

Albacore, false (*see* Tuna, little)

Albacore, great (*see* Tuna, bluefin (Atlantic))

Albacore, longfin (*see* Albacore)

Albatross, Lysan
SS 1087 (off B.C. coast)

"Albatross" Expedition
SS 522 (ichthyological finds)

Alberni Inlet, B.C.
J 14: 783 (effluent discharged into); **20:** 1135 (oceanography)
B 83 (oceanography re pulpmill pollution, & hydraulic model)
PRP 76: 66, **101:** 23 (pollution research; correction on **102:** 2); **109:** 3 (mass mortality of harbour fish)
S 344, 345 (oceanography); **431** (pulpmill pollution); **642** (estuarial embayment physical oceanography)
SS 931, 1100 (pollution research & hydrographic model)

Alberta (*see also* individual localities; *also* Jasper Park)
C 1921: 161 (diatoms)
J 13: 135 (Pigeon L. whitefish fishery); **14:** 687 (trout streams)
SS 358 (fishing investigations & industries)

Albinism
PRP 71: 20 (white killer whale)
SS 77 (lobster, porpoise & sea-urchin)

Albula vulpes (*see* Bonefish)

Albumins (*see also* Acids, amino; Composition, chemical; Protein fractions; Proteins)
PRP 71: 5 (poultry egg substitute from fish)
S 780 (electrophoresis of cod muscle)

Alcohols (*see also* Cholesterol; Glycerol; Sugars)
J 14: 46 (in sediments, seston, sewage, soils, fresh & marine waters); **18:** 865 (from marine oils)
B 59, 89 (of marine fats & waxes; *see* their indexes)
PRP 56: 11, **63:** 32, **65:** 67 (in Pac. dogfish liver oil); **92:** 16, **95:** 52, **97:** 6 (octanol in marine tube worm)
S 371 (octanol in marine tube worm); **697** (chromatographic impurity removal)

Alcyonaria
C 1917–18: 229 (checklist and index of Canadian Atl.)

Aldehydes (*see also* Formaldehyde)
J 14: 50 (in soils)

Alderdyce, Donald Francis
J 14: 783 (pulpmill pollution re salmon); **15:** 229 (salmon egg anoxia; correction on **16:** 386), 587 (sockeye & coho cruising speed), 797 (CO_2 effect on salmon egg development), 805 (salmon resistance to low temperature); **20:** 525 (coho resistance to toxicants)
B 117 (guiding young Pac. salmons)
PRP 98: 10 (olfactory perception in migrating Pac. salmon); **99:** 24, **106:** 14 (guiding salmon fingerlings); **108:** 27 (arsenite toxicity to young salmon)
S 444 (olfactory perception in migrating salmon); **560** (DDT forest spray effects on young salmon)

Alepidosaurus aesculapius (*see* Lancetfish, Pacific)

Alepisaurus borealis (*see* Lancetfish, Pacific)

Alepisaurus brevirostris (*see* Lancetfish, shortnose)

Alepisaurus ferox (*see* Lancetfish, longnose)

Alepisaurus richardsoni (*see* Lancetfish, Pacific)

Alepocephalus bairdii (*see* Smoothhead, Baird's)

Alewife (*Alosa pseudoharengus*) (*Pomolobus pseudoharengus;* gasperau; glut herring; mulhaden; sawbelly)
C 1901: 60 (re Canadian sardine industry); **1902–05:** 95, **2:** 195 (eggs & early life history); **2:** 195, 227 (distinction from shad); **3:** 314 (seasonal catch variations)
J 7: 94 (thiaminase in tissues); **16:** 147 (associations in Ont. streams), 813 (N.B.); **17:** 713 (re N.B. tidal power project); **20:** 735 (L. Huron distribution)
B 155: 88 (full description)
PRA 20: (3 trimethylamine oxide reduction during spoilage)
PRC 2: 3 (L. Erie experimental trawling incidental catches)
CFI 26 (canning methods)
CHO 27 (canning methods)
CLG 4: 10 (canned); **5:** 1 (proximate composition)
CNG 64: 27 (productive capacity)
CSG 19 (identification, habits, etc.)
S 155 (on N.S. banks); **187, 205** (spawning urge & conditions); **234** (in Malpeque Bay, P.E.I.)
SS 153: 80 (scale growth); **963** (thyroid function)

Alfonsin a Casta Larga (*Beryx decadactylus*)
B 155: 228 (occurrence off Canadian Atl. coast)

Algacide (*see also* Algae; Poisons, for natural waters)
CSG 23 (eel-grass control)

Algae, freshwater (*see also* Diatoms; Flora)
C 1911–14(II): 201, 219 (Georgian Bay, Ont.); **1918–20:** 181 (new genus & species, N.B.); **1:** 356 (Quill Lakes, Sask.); **2:** 519 (SW B.C. Desmidieae)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver. **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 5: 138 (cladoceran population periodicity); **7:** 248 (re stream fertility); **12:** 618 (Copper L., N.S.); **14:** 64 (toxic); **17:** 871 (*Chlamydomonas* growth factors)
B 56: 58 (Okanagan L., B.C.)
PRP 24: 21 (fertilizing for); **30:** 6 ("red snow"); **74:** 9 (*Potamegeton* pond weed)
S 29 (light spectrum effect on reproduction rate); **242** (resistance to rotenone); **297** (effect of fertilizing lake); **441** (Greenland)
SS 68 (Georgian Bay); **386, 390, 391, 413, 443, 465, 467** (of B.C. small lakes and alpine areas); **464, 516** (Alaska); **498** (factor in hatchery mortality); **577** ("red snow")

Algae, marine (*see also* Diatoms; Eelgrass; Flora; Irish moss; Kelps; Phytoplankton; Seaweeds; Seaweed products)
C 1901: 48, **1902–05:** 69 (of N.B. & N.S.); **1915–16:** 79, 93 (of Bay of Fundy and Passamaquoddy Bay); **6:** 41 (photosynthetic rates); **8:** 63 (of Hudson Bay)
J 18: 1001, 1007 (phytoplankters chemical & pigment composition)
B 127 (description, resources, uses, of B.C.)
PRP 41: 14 (producing dissolved oxygen supersaturation); **56:** 14 (*Cystophyllum geminatum*); **95:** 45 (vitamin B_{12} in)
CNG 44 (herring spawning on)
S 46 (seasonal disappearance in tide pools); **48** (growth rate re depth); **61** (of Departure Bay, B.C.); **106** (Chaetopteridae green bodies)
SS 60, 347, 349, 353 (B.C.); **237** (*Enteromorphia crinita* ecological polymorphism); **446, 447, 495** (Maritimes species, distribution, ecology); **1035** (growing on gray seals); **1288** (arctic and subarctic)

Algin and alginic acid (*see* Kelps; Seaweed products)

Algonquin Park, Ont.
J 11: 5 (catch & winter feed of lake trout); **17:** 541 (hybrid trout)

Ali, Mohamed Ather
J 15: 815 (Atl. salmon retina structure & responses); **18:** 259 (salmon eye measurements)

Alkalinity of natural waters (*see also* Limnology; Oceanography; pH of natural waters)
B 125: 29, 179 (determination in seawater)

All-mouth (*see* Monkfish)

Alley, Armine
C 8: 227 (fish ration effect on dog gastric secretion)
PRA 8: 10 (lobster flesh a digestive stimulator)
SS 471 (haddock & lobster effect on gastric juice)

Alligatorfish (*Aspidophoroides monopterygius*)
C 1902–05: 86, **1918–20:** 112 (Cape Breton, N.S.)
J 16: 511, 826 (N.B. records)
B 155: 365 (full description)

Alligatorfish, arctic (*Aspidophoroides olriki*) (sea poacher)
C 8: 32 (Hudson Bay)
J 9: 120 (larvae, Ungava Bay)
B 73: 5 (larvae, Baffin Is.); **155:** 366 (full description)

Alligatorfish, northern (*see* Sea poacher, Atlantic)

Allocapnia (*see* Stoneflies)

Allocyttus verrucosus (*see* Dory, coster)

Allolumpenus hypochromus (*see* Prickleback, Y-)

Allopatric forms
J 20: 27 (ninespine stickleback)

Allosmerus elongatus (*see* Smelt, whitebait)

Almy, Lloyd Huber
SS 287 (proteolytic enzymes of decomposing herring)

Alopias vulpinus (*see* Shark, thresher)

Alosa aestivalis (*see* Herring, blueback)

Alosa pseudoharengus (*see* Alewife)

Alosa sapidissima (*see* Shad, American)

Alose (*see* Shad, American)

Aluminum (*see also* Insulation)
PRA 57: 9 (filleting table)
CVG 31 (lining for frozen fish cartons)

Alutera schoepfi (*see* Filefish, orange)

Alutera scripta (*see* Filefish, scrawled)

Alverson, Dayton Lee
J 14: 953 (petrale sole tagging results); **18**: 1145 (albacore re ocean temperatures)

Ambergris
PRP 26: 19 (origin, characteristics, tests); **99**: 35 (large find in B.C. whale)
CHN 11 (characteristics, tests)

Amberjack (*see* Rudderfish, banded)

Ambloplites rupestris (*see* Bass, rock)

Ameiurus melas (*see* Bullhead, black)

Ameiurus nebulosus (*see* Bullhead, brown)

Amia calva (*see* Bowfin)

Amines (*see also* Ammonia; Bases, volatile; Dimethylamine; Hydroxylamine; Quality; Trimethylamine; Trimethylamine oxide)
J 6: 351, 359, 403, **7**: 580, **8**: 309, 325 (a series on amines in Atl. fish muscle); **16**: 21 (re fish spoilage odours)
PRP 98: 22 (toxicity for bacteria)
S 379 (antibacterial action of various)

Amino acids (*see* Acids, amino)

Amino sugars (*see* Chitin)

Ammocoetes (*see* Lamprey, sea; Lamprey, American brook)

Ammodytes americanus (*see* Sand lance, American)

Ammodytes dubius (*see* Sand lance, northern)

Ammodytes hexapterus (*see* Sandlance, Pacific)

Ammodytes tobianus personatus (*see* Sandlance, Pacific)

Ammonia (*see also* Amines; Bases, volatile)
J 13: 561 (in nitrite-treated cod flesh); **18**: 851 (in salted cod)
B 125: 75 (determination in sea water)
PRA 15: 4 (test for cod & haddock spoilage)
PRP 51: 12 (evaporator in refrigeration equipment); **57**: 16 (in dehydrated lingcod)
S 542 (in teleost excreta)

Amphibia (*see also* Frogs)
SS 637 (B.C.)

Amphineura (*see also* Mollusca)
S 587 (Minas Basin, N.S.)

Amphiodon alosoides (*see* Goldeye)

Amphipoda (*see also* Flea, sand; Parasites; Salmon-lice; Whale-lice; Zooplankton)
C 1911–14(I): 39 (new Caprellid); **2**: 100 (upper temperature tolerance); **3**: 1 (Hudson & James bays); **5**: 219 (of Cheticamp Expedition); **8**: 243 (Vancouver Is. freshwater)
J 6: 419 (*Themisto* off Baffin Is.); **8**: 134, **11**: 240 (Belle Isle Strait region), 709 (Ungava Bay); **19**: 1163 (in oxygen-poor polluted seawaters); **20**: 387 (resistance to high temperature & oxygen depletion)
B 78: 5 (*Pontoporeia* & *Mysis* in N Canadian lakes)
PRA 60: 14, **69**: 16 (lobsters eaten by)
PRP 13: 8, **19**: 3, **79**: 35, **99**: 3 (as fish feed); **52**: 16 (destructive of live bait); **99**: 3 (as crab feed); **103**: 19, **107**: 3, 5 (distribution in zooplankton)
NRB 3 (Nfld.)
S 79, 110 (ultraviolet light effect on); **502** (*Themisto* as production indicator in northern seas); **587** (Minas Basin, N.S.); **623** (arctic)
SS 383 (*Gammarus* distribution factors); **388, 412** (B.C.); **414** (B.C. freshwater); **1113** (Ungava Bay); **1228** (relict); **1411** (freshwater, James Bay)

Amphitrite (*see* Lighthouse oceanographic stations, B.C.)

Anabiosis (*see* Revival)

Anaesthetics
J 20: 1435 (for sockeye); **21**: 1539 (effect on trout glycolysis)
B 148 (properties, characteristics & uses, for fish)

Analysis, methods of chemical (*see also* Chromatography; Colorimetry; Oils, fats and lipids (determination methods); etc.; *for results see* Composition, chemical; Nutritive value; *also* under names of organisms, their parts and products; *also* Limnology; Oceanography; Pollution)
C 7: 119 (silica in waters)
J 2: 1 (nitrate in seawater); **6:** 351, **7:** 576 (trimethylamine); **8:** 309 (trimethylamine oxide); **10:** 521, 583 (chitin); **13:** 273 (Na, K, Ca, in seawater), 791 (fat extraction); **16:** 63 (muscle extractives); **17:** 337 (P compounds in seawater); **19:** 591 (Zn acetate protein fractionation)
B 37, 59, 89 (fish & marine mammal oils; *see* their indexes); **125** (seawater & its particulate matter; *see also* 1965 revised edition); **138** (for residual antibiotic in fillets)
PRA 32: 11 (for fish tissue fat content); **34:** 3 (trimethylamine)
PRP 102: 24 (seawater salinity)
S 13 (pentose in tissues); **23** (colorimetric for urea); **241** ($AgNO_3$ recovery for seawater chlorinity); **265** (reagent dispenser); **350** (isomerization); **575** (trimethylamine); **576** (NH_3, Fe, NO_3, P, in seawater); **577** (total lipid); **583** (assessment of data accuracy & precision); **645** (continuous-recording differential refractometer); **774** (biotin in seawater); **815** (low PO_4 concentrations in waters); **822** (starch-gel electrophoresis); **871** (free amino sugars in seawater)
SS 326 (silicate in seawater); **685** (vitamin A); **757** (NaCl in presence of protein); **782** (liver oil unsaponifiables); **994** (glass dispenser valve); **1377** (pulpmill wastes in seawater)

Analysis, proximate (see Composition, chemical; Nutritive value; *also* under names of organisms, their parts and products)

Analysis, statistical (*see* Mathematical treatment of data; Statistical methods; Statistics)

Anarhichas denticulatus (*see* Wolffish, northern)

Anarhichas latifrons (*see* Wolffish, northern)

Anarhichas lupus (*see* Wolffish, Atlantic)

Anarhichas minor (*see* Wolffish, spotted)

Anarrhichthys ocellatus (*see* Wolf-eel)

Anas, Raymond Edward
J 16: 91 (3-year-old pink salmon)

Anatomy (*see also* Histology; *also* names of organs and tissues; *also* names of individual organisms)
J 12: 593 (Chaetognatha), 754 (sturgeons); **20:** 347 (organogenesis of trout opercular apparatus)
PRP 74: 13 (lobster, shrimps, crayfish); **75:** 57 (hagfish)
S 654–658, 769, 859 (salmons skeletal, re Pac. stocks)
SS 317 (shrimp)

Anchoa hepsetus (*see* Anchovy, striped)

Anchovy (*Engraulis mordax*)
J 15: 909 (schooling characteristics)
B 59: 409, **89** (oils; *see* its index); **68:** 80, **68R:** 104 (full description)
PRP 52: 9 (as albacore feed); **63:** 38 (paste), 41 (various products); **65:** 73 (smoking); **77:** 108, **91:** 10 (canning); **83:** 40 (gibbing machine)
CNG 64: 49 (uncertain production potential)
S 453, 851: 54 (B.C. fishery)

Anchovy, striped (*Anchoa hepsetus*)
B 155: 98 (full description)

Andersen, Howard Gordon
CPO 1963-2 (cloud effect on airborne radiation thermometer)

Anderson, David Victor
J 18: 273 (Great Lakes morphology), 617 (L. Ontario energy budget)

Anderson, George Wilson
J 7: 55 (sterilizing seawater), 70 (*Clostridium* survival in smoked and salted fish), 370, 378 (bacteria re cod fillet quality)
SS 846 (slime removal re fish spoilage rate)

Anderson, John Murray
J 20: 827 (Atl. salmon DDT biochemistry)

Anderson, Marian
C 1: 1 (lumpfish study)

Anderson, Roy Clayton
J 17: 291 (*Pontonema* nematode clam parasite)

Andrekson, Alexander
PRP 82: 9 (Babine R. & Smith Inlet sockeye runs)
SS 903 (contributions to life history of sockeye salmon, No. 35)

Andrews, Cater William
J 13: 843 (arctic char biology); **20:** 1245 (Atl. salmon reaction to light; correction on **21:** 1553)
S 281 (heat effect on fish reaction to light)

Andrews, Ethan Allen
J 12: 143 (B.C. Ciliata folliculinids)

Andrews, Gertrude Louise
J 13: 147 ("jellied" condition of plaice)
PRA 59: 6 (capelin analysis)

Androgen (*see* Hormones)

Angevine, Winston Charles
PRA 57: 9 (aluminum filleting table)

Anglemouth, Brauer's (*Cyclothone braueri*)
B 155: 127 (description)

Anglemouth, longtooth (*Gonostomata elongatum*)
B 155: 128 (full description)

Anglemouth, veiled (*Cyclothone microdon*) (*see also* Lanternfish, small-eyed (Atlantic))
B 68: 105, **68R:** 132 (B.C., full description); **155:** 127 (Atl., full description)

Angler (*see* Monkfish)

Angler, deepsea (*Ceratias holboelli*)
J 16: 514 (off Anticosti Is.)
B 155: 428 (full description)

Angler, lesser deepsea (*Cryptopsaras couesi*)
B 155: 429 (Maritime occurrence)

Angling (*see also* Census, creel; Trout)
J 21: 643 (licence sales in N.W.T.)
B 57 (Margaree R. salmon, N.B.)
PRA 36: 6 (N.B. lake trout yield); **38:** 3 (P.E.I. pond trout yield); **43:** 3 (lake fertilization for improving trout yield)
PRP 13: 8 (Kamloops trout); **39:** 9, **42:** 22, **54:** 6 (Cowichan R. salmon); **46:** 20 (Cowichan R. steelhead); **104:** 38 (Lakelse L., B.C.)
S 215 (moon effect on rainbow trout); **276** (vs. netting for Atl. salmon); **676** (Atl. salmon catches)
SS 419 (Man. game fishes); **638** (conservation, B.C.); **752** (moon effect on trout); **895** (improving brook trout); **1079** (re Atl. salmon commercial fishing); **1089** (Indiana lake bluegill & largemouth bass)

Anguilla rostrata, A. bostoniensis (*see* Eel, American)

Animal feed (of fish, birds, mammals) (*see* Feed studies; Feedstuffs)

Animal protein factor (*see also* Feedstuffs; Vitamin B group)
PRA 48: 4, **49:** 5, **54:** 3 (in cod liver residue meal)
PRA 79: 37 (in fish products; probable relation to vitamin B_{12})

Annelida (*see also* Nereids; Oligochaeta; Polychaeta; Sandworm)
C 1917–18: 237 (Canadian); **1918–20:** 85 (Tomopteridae from Canadian Fisheries Expedition)
J 9: 164 (vitamin B_{12} in); **11:** 706 (parasitic on B.C. freshwater fishes)
S 5: 3 (Passamaquoddy Bay *Polydora*)
SS 260 (commensalism with echinoderm); **582** (*Saccocirrus* occurrence)

Anomia (*Anomia aculeata*) (silver shell)
C 1906–10: 239 (larvae recognition)
B 77: 29 (larvae, P.E.I.)

Anomura (*see* Crab, sand; Crabs, hermit)

Anonyx nugax (*see* Flea, sand)

Anoplagonus inermis (*see* Poacher, smooth)

Anoplarchus purpurescens (*see* Prickleback, cockscomb)

Anoplogaster cornuta (*see* Ogrefish)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal, **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Anoplopoma fimbria (*see* Sablefish)

Anoplura (*see also* Salmon-lice; Whale-lice)
J 11: 267, **13**: 501 (on seal and sea-lion skin)

Anotopterus pharao (*see* Daggertooth)

Anoxia (*see also* Lethal limits (other than temperature); Oxygen, dissolved)
J 15: 229 (Pac. salmon eggs; correction on **16**: 386); **20**: 387 (resistance of crustaceans to)

Anthozoa (*see* Actinia; Coral; Sea-anemone)

Antia, Navel Jamshedji
CPO 1961-19 (phytoplankton biology in plastic sphere)
S 774 (seawater biotin microbiological assay); **816** (phytoplankton production in plastic sphere); **871** (seawater free amino sugars determination)

Antiobotics (general) (*see* Poisons; Preservatives; Toxicity; for tetracycline types, *see* following heading)

Antiobotics (tetracycline types) (*see also* Ices; Preservatives; Quality; Spoilage; Sea water, refrigerated)
J 6: (penicillic acid as bactericide); **10**: 278 (effect on plankton growth); **14**: 62 (in algae & natural waters), 771 (effect on spoilage enzymes); **16**: 1, 13, 791 (fish flesh preservative); **16**: 689 (penicillin for stickwater preservation); **19**: 615 (effect on fish quality tests)
B 124 (as fishery products preservative); **126** (with refrigerated seawater for fish holding); **138** (preparation & use of dips for fillets)
PRP 67: 36, **99**: 18, **102**: 4, **104**: 7. **112**: 21 (incorporated into ice); **85**: 83, **92**: 10, **94**: 27, **101**: 10, **105**: 27 (for preserving stickwater, fish hydrolysates, condensed solubles); **93**: 24, **96**: 25, **100**: 12. **102**: 4, **106**: 8, **110**: 16 (effect on spoilage bacteria); **95**: 39, **104**: 7, 9, 19, **112**: 15 (in chilled seawater for fish holding); **99**: 22 (mould inhibitor); **104**: 22, **105**: 6, **109**: 14 (preserving whale carcasses); **105**: 12 (preserving shucked oysters); **107**: 13 (for woodborer control)
CVI 20 (preserving whale carcasses)
S 337, 370, 438, 499, 505, 524, 551A, 571, 670, 672, 718 (for, or in conjunction with, control of bacterial spoilage of fish flesh products); **373** (growth supplement to herring meals); **375** (for fish & beef); **404, 466, 524** (CTC incorporation in ice); **440, 447, 505, 524** (flesh penetration & heat liability of CTC); **514** (comparative effectiveness of tetracyclines); **540** (in fillet wrapping); **571** (review as preservatives); **596** (incompatibility with chlorine); **638** (Mg re bacterial sensitivity to)
SS 979 (mink feed additive); **1130, 1132, 1133, 1309, 1347** (for fish preservation); **1281** (effect on freshwater fish bacteria)
(*see also* Patents—Canada No. 552,878 re incorporating antibiotic in block ice)

Antimora, blue (*Antimora rostrata*) (blue hake)
B 155: 187 (full description)

Antimora rostrata (Atlantic: *see* Antimora, blue; Pacific: *see* Cod, longfin)

Antioxidants (*see also* Rancidity)
J 7: 137, 244, 522 (various, for rancidity control); **9**: 393 (lipoxidase inhibitors); **13**: 130, 569 (in freezing plaice & redfish fillets); **14**: 637 (preventing lobster meat discoloration)
B 59, 89 (for oils and meals; *see* their indexes)
PRP 44: 4, **45**: 21, **103**: 11 (for vitamin oils); **64**: 57 (for fresh & frozen salmon & herring); **66**: 17, **68**: 52, **71**: 15, **108**: 21 (for stored frozen fish); **74**: 3 (for frozen shrimp); **83**: 35 (for fresh fish); **84**: 51, **88**: 67 (for fish dips & glazes)
S 499, 672 (development & use); **640. 704** (for B.C. herring meal)
SS 783, 784 (re rancidity of Pac. coast fatty fish); **924** (re fruit flesh browning)

Anus
SS 39 (crayfish & lobster muscle contractility)

Apeltes quadracus (*see* Stickleback, four-spine)

Aphanopus carbo (*see* Scabbardfish, black)

Aplites salmoides (*see* Bass, largemouth)

Aplodinotus grunniens (*see* Drum, freshwater)

Apocope falcata (*see* Minnow, silver-gray)

Apocope nubila (a minnow)
S 144: 69 (Yellowhead L., B.C.)

Apodichthys flavidus (*see* Gunnel, penpoint)

Apparatus (and equipment) (Too numerous for collected references; they are in most cases implied or indicated in references under index headings pertaining to their applications)

Appendicularians
J 11: 431 (distribution, etc. in Belle Isle Strait)

Apple River, N.S.
J 2: 391 (salmon); **3**: 323 (birds)
B 51: 6 (salmon)
PRA 6: 7 (unusually early salmon run); **7**: 6 (salmon fry adaptation to still water)

Applegate, Vernon Calvert
S 639 (lampricide concentration colorimetric determination); **766** (halonitrophenol lampricides physical properties)
SS 1277 (sea lamprey larvicide)

Apristurus brunneus (*see* Shark, brown cat)

Apristurus profundorum (*see* Shark, deep-sea cat)

Aprodon cortezianus (*see* Eelpout, bigfin)

Aptocyclus ventricosus (*see* Lumpsucker, smooth)

Aquaria (*see also* Fluvarium)
J 17: 601 (dechlorination of water for), 687 (variable-volume); **20**: 1081 (sea-water)
PRP 102: 13 (exhibit for Vancouver Aquarium)
CHN 13 (continuous-flow marine)

Archosargus probatocephalus (*see* Sheepshead (marine))

Arctic, Canadian (*see also* "Calanus" series; Canadian Fisheries Expedition; Ice (on lakes, rivers, sea); Ocean; Oceanography, Arctic; *also* individual localities)
J 13: 233 (polychaetous annelids); **15**: 1186 (Foraminifera in ice); **20**: 1315 (Pycnogonida); **21**: 6 (ascidians)
B 72: 92 (fisheries surveys, 1944–45); **73** (young fish); **85** (Pinnipedia); **94** (freshwater vertebrates); **118** (ringed seal biology)
CAG 1 (seal economics); **2, 3** (walrus); **8** (beluga biology & hunting)
CNG 64: 55 (fisheries productive capacity)
S 326 (resources); **361** (marine ecology); **379A** (sea temperatures rising); **558** (clams as water conditions indicators); **765, 767** (seal exploitation in eastern)
SS 233 (ascidians); **675** (hydroids); **678** (Cumacea & Decapoda); **758** (coregonids); **770** (Polychaeta); **829** (arctic re subarctic zones delimitation); **982, 1068, 1395** (sea life); **1182** (Board investigations); **1183** (fishes & fisheries); **1201** (resources); **1268** (NW Passage traverse); **1288** (benthos); **1324** (fishes distribution & ecology)

Arctic Ocean (*see* Ocean; Oceanography, Arctic)

Arctica islandica (*see* Quahaug, ocean)

Area of lakes (*see* Lakes)

Argentina sialis (*see* Argentine, Pacific)

Argentina silus (*see* Argentine, Atlantic)

Argentina striata (*see* Argentine, striated)

Argentine, Atlantic (*Argentina silus*) (herring smelt)
J 16: 506 (off N.S.); **18**: 679 (osteology & phylogeny)
B 155: 122 (full description)
S 203, 226 (in N.S. waters)

Argentine, large-eyed (*Nansenia groenlandica*)
B 155: 123 (full description)

Argentine, Pacific (*Argentina sialis*)
J 18: 679 (osteology & phylogeny)

Argentine, striated (*Argentina striata*)
B 155: 123 (full description)

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Arginase (*see* Enzymes)

Arginine (*see also* Acids, amino)
PRP 71: 5 (in fish products for poultry feed); **80**: 47 (from salmon milt)

Argis (a decapod)
J 21: 461 (*A. lar* re *A. dentata*)
AF 10m (*A. dentata*)
S 482 (Ungava Bay)

Argulidae
S 2 (Schubenacadie R., N.S.)

Argyropelecus aculeatus (*see* Hatchetfish, Atlantic silver)

Argyropelecus heathi (a hatchetfish)
J 19: 271 (NE Pac. distribution)

Argyropelecus olfersii (*see* Hatchetfish, Atlantic silvery; Hatchetfish (Pacific))

Argyropelecus sladeni (*see* Hatchetfish, silvery)

Aristostomias scintillans (*see* Loosejaw (Pacific))

Armstrong, Iva L.
J 17: 1 (time & temperature effect on cod fillet cooking)

Arnason, Ingolfur Gilbert
S 312 (new Man. copepod)

Arnold, Edward Simon
J 18: 321 (fish muscle biochemistry re rigor)

Aro, Kosta Victor
J 21: 1329 (sockeye stock size re resultant production)
PRP 82: 17 (sockeye egg counts differences); **87**: 37 (marked sockeye returns); **90**: 3 (Babine R. salmons escapement); **94**: 5 (tagged sockeye re exploitation variations)

Aron, William Irwin
J 19: 271 (marine animal indicators of NE Pac. water masses)

Arrow-fish (*see* Dragonfish, arrow)

Arrow-worms (*see* Chaetognatha)

Arsenic compounds
J 16: 7 (in Atl. coastal seawater)
PRP 108: 27 (sodium arsenite toxicity to young salmon)

Artediellus uncinatus (*see* Sculpin, arctic hookear)

Artedius fenestralis (*see* Sculpin, padded)

Artedius harringtoni (*see* Sculpin, scalyhead)

Artedius lateralis (*see* Sculpin, smoothhead)

Artedius meanyi (*see* Sculpin, Puget Sound)

Arthropoda (*see also* subclassifications; *also* scientific and common names)
J 9: 164 (vitamin B_{12} in two species); **13**: 489 (parasitic, from B.C. Pinnipedia)
AF 10m (Decapoda classification); **10n** (Pantopoda classification)
PF 10e (Cirripedia classification)

Ascelichthys rhodorus (*see* Sculpin, rosylip)

Ascidiacea (*see also* Tunicata)
C 1906–10: 103 (B.C.); **1917–18**: 254 (E Canada); **1**: 27 (Hudson Bay)
J 21: 1505 (Canadian Arctic)
S 60 (validity of certain species); **78** (temperature effect on digestion); **95** (development); **517** (sterol in)
SS 43, 137 (Canadian coasts); **64** (mouth origin); **65** (protostigmata in); **66** (Styelidae classification); **216** (ascidian test for age determination); **250** (generic nomenclature)

Ascorbic acid (*see also* Antioxidant; Rancidity)
J 7: 137, 237, **13**: 130, 569 (for rancidity control in fresh or frozen flesh); **14**: 61 (in seston & seawater), 637 (for preventing lobster flesh discoloration)
PRP 68: 52, **71**: 15, **84**: 51, **88**: 67, **108**: 21 (antioxidant for frozen fish flesh); **74**: 3 (for frozen shrimp); **93**: 23 (compatibility with antibiotic)
S 672 (re browning of fresh & frozen fruit)

Asemichthys taylori (*see* Sculpin, spinynose)

Ash content (*see* Mineral constituents)

Aspidophoroides monopterygius (*see* Alligatorfish)

Aspidophoroides olriki (*see* Alligatorfish, arctic)

Assay (*see* Analysis, methods of chemical; Vitamin)

Association (*see also* Commensalism)
SS 214, 354 (Strait of Georgia marine animals); **560** (blue mussel)

Astacine (*see* Pigment)

Astacus potamobius (*see* Crayfish)

Astaxanthin (*see* Pigment)

Asteroidea and *Asterias* (*see* Starfishes)

Asterotheca alascana (*see* Starsnout, gray)

Asterotheca infraspinata (*see* Starsnout, spinycheek)

Asterotheca pentacantha (*see* Starsnout, bigeye)

Astyanax mexicanus (*see* Tetra, black banded)

Athabaska, Lake, Alta.
C 1: 419 (list of fishes)
J 7: 190 (pike)
B 72: 69 (fisheries survey); **78** (Pontoporeia & Mysis)
SS 815 (arctic grayling)

Atheresthes stomias (*see* Flounder, arrowtooth)

Atkinson, Walter
CPO 1961-15, 1962-7, -10, -19 (oceanographic observations between Juan de Fuca Strait and ocean weathership)

Atlantic Herring Investigation Committee
B 111 (inclusive Report of; individual reports are among entries under Herring, Atlantic (biology))

Atlantic Ocean (*see* Ocean; Oceanography, Atlantic)

Atlantic Oceanographic Group (*see also* the Annual Reports of the Board)
B 134 (history & work)

Atlantic salmon (*see* Salmon, Atlantic (biology); Salmon, Atlantic (products))

Atlantic Salmon Co-ordinating Committee (*see also* Salmon, Atlantic (biology))
SS 969 (first Report)

Atkinson, Point, B.C.
J 11: 22, 803 (tidal current measurements)

Atresia (resorption)
J 20: 899 (in brook trout maturing ovaries)

Attractants (*see* Odour, reaction to)

Auk, little
SS 976 (in Britain)

Aulorhynchus flavidus (*see* Tubesnout)

Aurelia (*see* Jellyfish)

Aureomycin (chlortetracycline; CTC) (*see* Antibiotics (tetracycline types))

Austin, Kenneth Hedler
J 17: 337 (NE Pac. phosphorous cycle)
SS 576 (NH_3, NO_3, Fe, P, determination in seawater)

Austria
SS 629 (fisheries biology & culture)

Autolysis and autolysates (*see also* Solubles, condensed)
J 13: 869 (of viscera for animal feeds)
PRP 3: 3 (in cold-stored fish oils); **17:** 8 (in herring during salting); **33:** 13 (in halibut muscle); **93:** 20, **96:** 16 (of halibut re ruminant digestion); **94:** 27 (of herring for chick rations)
SS 286, 737 (of muscle protein)

Auxis thazard (*see* Mackerel, frigate)

Availability (*see* Abundance; Catch per unit effort; Catchability; Catches; Effort and intensity of fishing; Yield)

Averruncus emmelane (*see* Poacher, windowtail)

Avocettina gilli (*see* Eel, snipe)

Axiopsis spinulicauda (*see* Shrimps, various Pacific)

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B

Babine Lake, B.C. (*see also* Babine Lake system)

J 12: 93 (sockeye smolt parasites), 499 (whitefishes; limnology); **13**: 695 (young sockeye distribution)

PRP 8: 6 (early salmon study); **63**: 46 (salmon study plans); **71**: 11, **87**: 37 (sockeye marking & returns); **78**: 6 (limnology; salmons & other fishes; predators); **82**: 16, 17 (sockeye egg counts); **90**: 3, 9 (effect of Babine R. slide); **91**: 17, 21 (sockeye smolts & runs); **94**: 15 (counting fence repairs); **99**: 30 (sockeye emigrant sizes)

Babine Lake system, B.C. (*see also* Babine Lake; Six-Mile Creek)

J 12: 499 (limnology; whitefishes ecology); **15**: 771 (counting fence), 961 (young sockeye distribution & abundance); **20**: 919 (young sockeye migration)

S 764 (sockeye ecology); **885** (pelagic entomostracan zooplankton)

Babine River, B.C. (*see also* Six-Mile Creek; Skeena River)

B 101, 106 (rockslide obstruction to salmon & effects of removal)

PRP 88: 60, **90**: 3, 9 (effects of rockslide); **97**: 31 (sockeye spawning)

SS 1008 (sockeye smolts)

Babkin, Boris Peter

C 6: 315, **7**: 1, 11, **8**: 207 (skate physiology)

J 1: 239 (skate stomach innervation), 251 (elasmobranch gastric secretion)

PRA 2: 3 (haddock flesh & skin as digestive stimulator)

S 57 (digestive function in *Fundulus*); **99** (skate pancreatic secretion)

Bacillariophyceae (*see also* Algae; Diatoms; Phytoplankton)

J 18: 1001, 1007 (chemical composition & pigments)

Bacillus salmonicida (*see* Furunculosis)

Bacteria: general (*see also* following Bacteria headings)

C 1902–05: 53, 111 (pollutive, from sawdust in waters); **1917–18** (destructive of marine copepods); **1**: 377 (marine spore-forming); **6**: 417, 423 (water bottle for collecting deep-sea); **7**: 139 (*Pseudomonas* viability), 431 (temperature growth range of marine); **8**: 275, 291 (in slime & intestine of marine fishes), 459, 489 (low-temperature cultural characteristics of marine)

J 1: 95, 109 (freezing effect on marine); **4**: 219 (*p*H effect on acid-resistant); **5**: 1 (*B. salmonicida* viability); **6**: 10 (halophile growth re environment), 45 (glucose metabolism of marine); **7**: 17 (trimethylamine formation re Enterobacteriaceae taxonomy), 55 (electrical seawater sterilization), 128 (isolation from Atl. cod), 162 (differentiation of *Pseudomonas*), 461, 528, 536, 567 (nitrite-reducing), 552 (culture peptones from fish flesh); **8**: 157 (culturing halophiles), 377 (red halophiles survival); **10**: 62 (fasting effect on fish intestinal), 69 (hydroxylamine effect on); **11**: 261 (drop-plate enumeration); **13**: 183, 195 (red halophiles differentiation), 201 (producing nitrite from hydroxylamine); **14**: 771 (H_2S & trimethylamine formers); **19**: 437 (enumerating coliform types in brines); **20**: 729, **21**: 641 (amino-acid composition of); **21**: 1371 (antioxidant effect of)

PRA 10: 16 (freezing effects on); **24**: 9 (in snow & natural ice); **36**: 14 (in processing-plant water supply)

PRP 9: 19 (growth & characteristics of marine); **11**: 14, **22**: 14 (growth at freezing & lower temperatures); **49**: 8, **59**: 15, **62**: 7 (direct counting of, as fish quality test); **75**: 43 (media from fish peptones); **85**: 83 (vitamin B_{12}-forming); **96**: 11, **97**: 18 (nutritive requirements & metabolism of marine); **96**: 16, **104**: 23 (re cellulose digestion in ruminants); **98**: 22 (toxicity of amines to); **102**: 4 (in gut of living fish)

S 41, 114 (marine, of fishes); **310, 325, 467** (vitamin B_{12}-forming); **335, 428, 774** (*Lactobacillus* in vitamin B assays); **377, 457** (role in ruminant cellulose digestion); **388, 432, 478, 486, 487, 516, 521, 533, 608, 634** (nutrition requirements & metabolism); **421** (propionic acid oxidizer); **638** (magnesium re sensitivity to antibiotics); **772** (glucose & ribose oxidizer); **858**: 228 (in oceanic seawater)

SS 17 (in sawdust pollution); **188** (in Strait of Georgia waters); **527** (re low temperatures); **648** (halophile growth limits); **746** (coliform in hibernating oysters);

769, 786 (*Shigella* genus division); **949** (producing vitamin B_{12} from fish wastes); **1036** (growth factors); **1072** (staining technique for halophiles); **1223, 1253** (tricarboxylic acid cycle enzymes in marine); **1236** (marine); **1281** (freshwater)

Bacteria: in disease of organisms (*see also* Botulism; *Clostridium*; Disease; Furunculosis; *Staphylococcus; also* other cognate headings)

C 1917–18: 149, 169 (salmon trout)

J 3: 358 (chitinovorus, in lobster); **5:** 1 (*B. salmonicida* viability); **6:** 74 (nitrite inhibition of pathogens)

PRA 5: 11, **29:** 15, **65:** 3 (Atl. oyster); **19:** 10 (chitinovorus, in lobster)

CSG 27, 28, 29, 31, 34 (Atl. oyster)

CHN 9 (*Gaffkya* in lobster)

S 218 (*B. salmonicida* serological relations); **243** (whirling disease of trout); **252** (immunizing trout against *B. salmonicida*); **283** (P.E.I. oysters); **648** (epizootic in oyster); **424** (furunculosis culture characteristics)

Bacteria: in handling, processing and spoilage of fishery products (*see also* Antibiotics; Bacteria: general; Bacteria: suppression of; Botulism; *Clostridium*; Disinfectants; Quality; Preservatives; *Pseudomonas*; "Reddening"; Sanitation; Trimethylamine; Trimethylamine oxide; *also* other cognate headings)

C 1917–18: 179 (finnan haddie), 181 (canned sardines); **1918–20:** 103 (canned sardines); **1921:** 1 (canned clams), 279 (pickled herring); **2:** 1 (canned lobster); **3:** 347, **4:** 257, **5:** 431, **8:** 275, 281 (in intestine & slime); **4:** 27 (bactericidal smoking effect), 95 (clams), 227 (haddock, lobster, clam); **7:** 147 (effect of chilling), 425 (chromogenic on halibut), 431 (growth temperature range); **8:** 301 (frozen fillets), 474, 489 (growth effects of low temperatures)

J 3: 70, **5:** 438, **6:** 10, 17, **9:** 157, 377, **11:** 261, **13:** 183, 195, **20:** 997 (sources and effects of halophilic on salted & other types of cured fish; *see also* "Reddening"); **3:** 70, 439, **4:** 136, **5:** 249, 276, 287, 438, **6:** 1, 10, 17 (a series of studies on bacteriology re processing of salt cod & other salt fish); **3:** 77, **4:** 63, 229, 252, 267, 412, **5:** 32, 197, 203 (a series of studies on bacterial spoilage in Atl. fish products, & its measurement); **3:** 100 (sterilizing times for canned fish), 439 (effect of salt); **4:** 355, **5:** 121 (*p*H role in inhibition); **4:** 367, **5:** 187, **6:** 194, 243, 359, 368, **7:** 17, **8:** 195, **17:** 595 (reducing trimethylamine oxide to trimethylamine); **6:** 53 (surface bacteria chief cause of spoilage), 119 (population fluctuations in fresh muscle), 303 (in dehydrated fish), 403 (iced eviscerated cod); **7:** 370, 378, 430, 528, 580 (Atl. cod fillets); **8:** 111 (chilling effect on); **9:** 148 (significance of *Flavobacterium*); **12:** 329, **13:** 21, 207, 291, 861, **16:** 223, **18:** 295 (a numbered series of 7 studies on spoilage of Atl. fishes on vessels at sea); **13:** 35 (in ice); **14:** 617, 775, **16:** 13, 21 (*Pseudomonas* action on fish muscle); **16:** 791, **17:** 811 (dogfish); **19:** 437 (coliform, in fish-salting brines); **20:** 1231 (effectiveness of washing fresh fish); **21:** 37 (irradiating fish storage brines), 813 (irradiating scallop meat), 1371 (antioxidant effect of), 1481 (producing dimethyl sulphide in oysters)

B 8 (canned lobster discoloration); **9:** 17, **112:** 26 (halophilic in cured fish); **12, 29, 49** (halibut skin discoloration & spoilage); **20** (frozen fillets); **100** (round fish at sea; fillets); **103** (fishing vessel holds); **124, 126, 138** (antibiotic applications); **126** (refrigerated seawater for holding fish); **147** (lobster storage & shipment)

PRA 6: 3 (in vessel holds); **15:** 4, **23:** 6, 10, **31:** 3, **39:** 3, **41:** 10 (role in spoilage); **35:** 20, **36:** 10, **38:** 10, **40:** 7, **44:** 8, **55:** 17, **56:** 5, 10, **70:** 23 (in filleting operations); **37:** 3, **44:** 8 (iced gutted cod); **55:** 3 ("sliming" in light-salted fish); **58:** 27 ("bilgy" fish); **65:** 12 (coliform detection in frozen fish)

PRP 5: 7, **6:** 3, **7:** 3, **27:** 11 (halibut skin yellowing & control); **13:** 3 (herring salting); **18:** 7 (oil reddening in frozen fish); **20:** 9, **33:** 23 (halibut on vessel); **38:** 3, **39:** 16 (ultraviolet light effect on);

52: 24 (in fish canning); **57**: 16 (in dehydrated fish); **71**: 15, **97**: 18, **98**: 22 (nature; action; inhibition); **78**: 11 (re flesh acidity); **81**: 80 (mechanical washing to remove); **96**: 20 (causing unusual odour in Pac. cod); **104**: 7 (re holding fish in chilled seawater); **105**: 12 (shucked oysters); **101**: 6, 10, **105**: 27 (stickwater); **104**: 22, **105**: 6, **109**: 14 (re whale carcass preservation)

CHO 12, 15, 16 (lobster canning)

CHN 1 (in fish vessels at sea)

CVI 20 (whale carcasses)

NSB 1 (dried cod); **4** ("pink" fish); **13** (canning)

S 370 (review of post-mortem effects on fish); **388** (nature of); **403** (re odour development in fish holds); **407, 408** (re stickwater conversion to solubles); **595** (in handling, chilling & freezing fish); **638** (magnesium ion re sensitivity to antibiotics); **661** (value of direct counts)

SS 160, 206 (swelled canned sardines); **168** (effect on gills re product spoilage); **281** (re canning); **286** (action on muscle protein); **298, 360, 396, 445, 473, 474, 879, 910, 1050** (re general fish spoilage); **301** (haddock spoilage); **648** (halophiles growth limits); **689, 719, 876, 877, 879** (trimethylamine oxide reducers); **1412** (thermophiles in foods and food additives)

Bacteria: suppression of (*see also* Antibiotics, tetracycline types; Disinfectants; Freezing; Irradiation; Preservatives; Sea water, refrigerated; Sodium nitrite; *also* other cognate headings)

SS 360, 396, 445, 473, 474, 525, 526, 527, 910 (general methods for holding catches at sea); **721, 1309, 1347** (by various preservatives and antibiotics); **874** (by freezing); **1050** (technological implications); **1151** (halophiles in stored salt); **1281** (on freshwater fish)

Badgers Quay, Nfld.

B 141: 23 (longlining experiments for cod)

PRA 63: 19 (longlining experiments)

Baffin Bay, N.W.T. (*see also* Oceanography, Arctic)

J 13: 303, 596, **14**: 731 (oceanography)

S 471 (submarine topographic features)

Baffin Island, N.W.T. (*see also* Arctic, Canadian)

J 6: 419 (*Themisto*); **10**: 326 (arctic char)

B 73: 4 (*Agonus* from L. Harbour)

S 469 (marine biology); **623** (marine infaunal benthos)

SS 662 (new stonefly)

Baggerman, Bertha

J 17: 295 (seaward migrating Pac. salmon physiology)

Baikal, Lake, U.S.S.R.

S 594 (palaeontology of seals)

Bailey, Basil Edwin

C 7: 405 (vitamin A in lingcod liver oil); **8**: 265 (vitamin A in salmon liver oil)

J 2: 431 (vitamins in canned salmon); **3**: 469 (salmon pigments); **4**: 55 (pilchard oil pigments), 334 (test for benzoic acid preservative action); **6**: 103 (free & esterified vitamin D), 109 (nutritionally essential fatty acids in fish oils)

B 46 (feeding oils from fishes); **59** in part (marine animal oils chemistry & technology); **89** editor (marine animal oils chemistry & technology)

PRP 11: 22, **13**: 13 (oil composition & vitamins of canned salmon); **16**: 7, **19**: 5, **23**: 11, **26**: 17, **50**: 10, **51**: 18 (fish & whale liver oil vitamins); **21**: 10 ("curd" in canned salmon); **22**: 15 (chum salmon egg products); **24**: 23 (cleaning fish oil drums); **41**: 8 (chinook salmon flesh composition), 17 (Ca & P in bone of canned salmon); **46**: 18 (vitamin A & D potency tests); **47**: 12 (combined vs. free vitamin D activity); **53**: 9 (fishery products nutritive value chart); **54**: 4 (hake liver oil), 15 (vitamin A oil stability); **55**: 16 (oil cold test method); **57**: 11 (fishery products nutritive value); **84**: 68, **88**: 61 ("chalky" halibut flesh); **88**: 66 (freshwater fish trimmings & offal utilization)

CVI 6 (vitamin A in fish oils): **14** (sperm whale oil); **15** (preservation effects on nutritive factors)

S 162 (canned salmon antirachitic value)

SS 523 (Prince Rupert "sea serpent" sequel); **580** (Friday re eating fish); **693** (estimating fish muscle decomposition); **724** (canned salmon nutritive value); **736**

(fish in wartime diet); **737** (muscle autolysis of active vs. passive fish); **906** (B.C. herring products review)
PRP 89: 75 (obituary of)

Bailey, Loring Woart
C 1906–10: 243, **1911–14(I):** 11, **1915–16:** 93 (diatoms & phytoplankton of Passamaquoddy Bay region); **1915–16:** 109 (St. Croix R. & Passamaquoddy Bay geology); **1918–20:** 115 (Canadian diatoms); **1921:** 155 (some Sask. & Alta. diatoms); **2:** 31 (catalog of Canadian diatoms)
SS 34, 46, 47, 84 (marine, estuarial & freshwater diatoms of Maritimes); **123** (Vancouver Is. E coast diatoms); **139** (Maritimes marine life)

Bailey, William Best
J 10: 155 (Scotian Shelf oceanography); **11:** 32 (Bay of Fundy oceanog.), 198 (Belle Isle Strait oceanog.); **13:** 303 (Baffin Bay water origin); **14:** 731 (Arctic Archipelago oceanog.); **15:** 1163 (Belle Isle Strait currents)
B 111: 213 (Gulf of St. Lawrence deep-water features)
PRA 63: 16 (W Atl. water temperatures); **64:** 16 (sea temperatures around N America)
S 316 (Atl. influence in Hudson Bay); **317** (Labrador current vertical temperatures); **395** (ICNAF area waters); **471** (oceanog. features of submarine topography)
SS 1064, 1278 (Canadian Arctic oceanog.)

Baillie, William Harold Trevorrow
J 6: 472 (Bay of Fundy Polychaeta)

Baird, Elizabeth A.
J 6: 194, 243 (bacterial trimethylamine oxide reduction)
SS 769 (*Shigella* bacteria classification)

Bait (*see also* Bloodworm; Sandworm)
C 1901: 33 (clams for cod, mackerel, etc.); **1906–10:** 23 (fresh vs. frozen herring for cod)
B 47: 27 (herring for halibut, cod, salmon); **62:** 27 (clams, fish heads, etc. for crabs); **109:** 34, **141:** 33 (for longlining cod)
PRA 3: 13 (efficiency of variously preserved herring & clams); **5:** 5 (mackerel viscera & gills for lobster); **10:** 8, **13:** 7, 9 (freezing & storage of mackerel & herring); **58:** 17 (efficiency of various for groundfish)
PRP 36: 14 (for porpoises, dogfish, sharks); **42:** 8 (preserving salmon eggs for); **52:** 62 (live, eaten by sandfleas); **56:** 12 (preserving fish for); **103:** 5 (for salmon trolling)
MSP 2 (whelks & mussels for cod)

Baitworms (*see* Bloodworm; Sandworm)

Bajkov, Alexander Dmitrovich
C 3: 377, **4:** 197, 343 (Jasper Park lakes fishes & plankton); **5:** 381, 441, **7:** 325 (biology & whitefishes of Man. lakes)
S 62 (fishes of Hudson Bay drainage area)
SS 300, 472 (Man. lakes plankton); **332** (new whitefish); **358** (Prairie Provinces fishery investigations & industry); **359** (Lake Winnipeg sturgeon & industry); **418** (population & productivity of lakes); **419** (Man. game fishes); **524** (fish daily feed consumption estimation)
PRP 105: 25 (obituary of)

Baker, Edgar George
J 16: 791, **17:** 811 (dogfish flesh keeping quality)
PRP 86: 21 (mechanically refrigerated railway reefer); **110:** 16 (tetracycline antibiotics as preservatives); **112:** 15 (CTC as preservative in refrigerated seawater)
S 514 (tetracycline preservatives comparative effectiveness)

Balaena glacialis (*see* Whale, black right)

Balaena mysticetus (*see* Whale, bowhead)

Balaenoptera acutorostrata (*see* Whale, minke)

Balaenoptera borealis (*see* Whale, sei)

Balaenoptera musculus (*see* Whale, blue)

Balaenoptera physalus (*see* Whale, finback)

Balanus species (*see* Barnacles)

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Baldwin, Norman Scarlett
J 17: 541 (hybrid trout life history)

Balistes capriscus, B. carolensis (*see* Triggerfish, gray)

Balistes vetula (*see* Triggerfish, queen)

Ball, Edwin Arthur Robert
PRP 106: 10 (young Pac. salmon tagging mortality); **111:** 14 (chinook & chum salmon tagging)

Balloonfish (*see* Puffer, northern)

Balls (concretions in lakes)
SS 550 (consolidated fir or spruce needles)

Balls, fish (*see* Cakes, fish; Delicatessen)

Bangham, Ralph Vandervort
J 11: 673 (B.C. freshwater fishes parasites; correction on **12:** 941)

Bankia (*see* Shipworms)

Banks, fishing (*see also* Grand Bank; International Commission for the Northwest Atlantic Fisheries)
PRA 22: 3 (cod migrations on Atl. offshore)

Banks, Russell Ewen
J 15: 79 (Scotian Shelf surface water circulation)

Banks Island (*see also* Arctic, Canadian)
J 13: 223 (Polychaeta)

Bannerman, Mabel Allison
S 629, 705 (gas–liquid chromatography techniques); **652** (long-chain dicarboxylic acids preparation)

Baptiste Lake, Alta.
B 95: 33 (*Triaenophorus* control)

Barber, Frederick George
J 14: 945 (Hecate Strait region wind effects); **17:** 91 (estuarine analogy in subarctic Pac.)
PRP 100: 6, **101:** 20, **103:** 23, **105:** 14, **108:** 15, **110:** 3 (Hecate Strait region oceanography)
CPO 1958–7 (NE Pac. oceanography)
S 586 (Queen Charlotte Is. currents & water structure)

Barbus carnaticus and ***B. dubius*** (fishes of India)
J 16: 1 (preservation for food)

Barker, Horace Albert
SS 1330, 1358, 1366 (coenzyme B_{12} nucleoside: preparation; electron spin resonance)

Barker, Robert
PRP 104: 16 (changes in fish stored in refrigerated seawater); **105:** 6 (tetracycline antibiotics for keeping whale carcasses)

Barkley Sound, B.C. (*see also* Alberni Inlet; Oceanography, Pacific (NE coastal waters))
J 15: 909 (juvenile herring); **16:** 283, 309 (herring distribution); **19:** 735 (herring larvae)
B 39: 4 (fish reduction plant pollution)
PRP 109: 12 (juvenile herring abundance)
SS 356 (salmon trolling)

Barnaby, Joseph Thomas
SS 641 (water bodies productivity)

Barnacle, goose (*Lepas anatifera*)
J 18: 279 (sheltering young rockfish)
PRP 45: 17 (*Lepas fascicularis* occurrence)

Barnacles (***Balanus***, etc.) (*see also* Barnacle, goose)
C 2: 469 (review of B.C. Cirripedia); **3:** 501 (on N. Pac. whales); **5:** 213 (*Scalpellum columbianum*)
J 1: 469, **10:** 76 (nervous system); **11:** 267 (on whales); **12:** 359 (*B. improvisus* larvae transport), 762 (Hudson Strait)
PRA 63: 3 (*B. balanoides* as green crab feed)
PF 10e (Cirripedia)
S 5: 3 (Passamaquoddy Bay); **498** (*B. glandula* sterol & synthesis)
SS 53, 76 (parasitic on shrimp); **331** (*B. nubilis* operculum movement mechanism); **556** (light re growth)

Barraclough, William Edward
J 9: 143 (B.C. tubesnout poacher); **11:** 501 (Strait of Georgia bathypelagic fishes); **16:** 759 (black-and-white prickleback); **18:** 1167 (B.C. smoothtongue); **19:** 851 (B.C.

thornback sculpin); **21**: 1333 (eulachon marine life)
B 104, 123 (midwater herring trawl)
PRP 69: 74, **71**: 12, **72**: 41 (fish livers vitamin A); **77**: 91 (decline of B.C. soupfin shark fishery); **98**: 17 (brill availability re recruitment decline); **100**: 16 (tagged brill winter recaptures)
CNG 12 (albacore feed); **36** (midwater trawl); **48** (measuring midwater trawl depth)
S 392 (B.C. dogfish fishery); **436** (two-pronged hatchetfish); **460** (abnormal longnose skate); **757** (underwater sound scattering)
SS 822 (warty poacher); **842** (dogfish abundance measures); **904, 1014** (B.C. fanged viperfish records); **945** (an abnormal carp); **1147, 1148, 1189, 1205** (midwater trawl developments)
(*see also* Canadian Patents Nos. 608, 969 & 612, 992 re midwater trawl)

Barracuda (species ?)
B 7: 20 (Langerhans islets tissue re insulin)

Barracuda, Pacific (*Sphyraena argentea*)
B 68: 204, **68R**: 238 (full description)

Barracudina, ribbon (*Notolepis coruscans*)
B 68R: 154 (full description)

Barracudina, short (*Paralepis brevis brevis*)
B 155: 148 (full description)

Barracudina, slender (*Lestidium ringens*)
J 19: 307 (NE Pac. distribution)
B 68R: 153 (full description)

Barracudina, white (*Paralepis rissoi krøyeri*) (scaled lancet)
J 9: 106 (Ungava Bay); **16**: 507 (St. Lawrence R. estuary records)
B 155: 149 (full description)

Barreleye (*Macropinna microstoma*)
B 68: 104, **68R**: 131 (full description)

Barrelfish, American (*Palinurichthys perciformis*) (black pilot; logfish; rudderfish)
C 1902–05: 85 (Canso, N.S., occurrence)
J 16: 509 (records off N.S.)
B 155: 330 (full description)

Barret, Izadore
J 8: 125 (stored salmonid eggs & sperm fertility)

Barriers (*see also* Guiding; Lamprey, sea; Migration; Obstructions)
S 418 (preventing eels from entering lake)

Bartsch, Paul
SS 209 (wood-boring molluscs classification); **210** (new B.C. marine mollusca)

Bary, Brian McKenzie
J 20: 789, 1031, 1519, **21**: 183 (NE Atl. oceanography: surface water; plankton species; zooplankton distribution; indicator species)
S 757 (underwater sound scattering)

Bases, volatile (*see also* Ammonia; Dimethylamine; Quality; Trimethylamine)
J 3: 79, 441 (re spoilage assessment); **5**: 121 (pH effect on production by spoilage bacteria); **6**: 303 (in dried stored fish)
PRP 52: 24 (before and after canning); **57**: 16 (in dehydrated fish)
SS 1235 (salt cod)

Baslow, Morris Henry
J 21: 107 (neurosine in fish brain)

Bass, black (freshwater) (*see* Bass, largemouth; Bass, smallmouth)

Bass, black (marine) (*see* Rockfish, black)

Bass, calico (*see* Crappie, black)

Bass, largemouth (*Micropterus salmoides*) (*Aplites salmoides*; *Huro salmoides*; largemouth black bass)
C 1911–14(II): 41 (Lake Huron), 177 (cestode parasite)
J 10: 196 (upper temperature limit); **11**: 702 (parasites); **12**: 920 (blood of exercised); **14**: 654 (B.C. distribution); **15**: 607 (preferred temperature & vertical distribution); **16**: 147 (association in Ont.

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streams); **19:** 1005 (water temperature effect on digestion)
B 7: 20 (Langerhans islets tissue re insulin)
S 144: 71 (B.C. lakes); **445** (lethal temperature limits); **481** (Man.)
SS 1089 (Indiana lake angling & management); **1208:** 151 (full description, B.C.)

Bass, rock (*Ambloplites rupestris*)
C 1911–14(II): 38 (Lake Huron); **2:** 146 (SW Ont.)

Bass, smallmouth (*Micropterus dolomieui*) (smallmouth black bass)
C 1911–14(II): 41 (Lake Huron), 177 (parasite)
J 11: 702 (parasites); **12:** 147 (South Bay, Ont., fishery; correction on **12:** 942); **13:** 631 (South Bay, Ont., mathematical theory of fishery); **14:** 654 (B.C. distribution); **16:** 147 (association in Ont. streams)
B 119 (population estimate; vulnerability & size)
PRA 32: 3 (spread & growth in N.B. lakes)
PRC 2: 37 (canning of Lake Erie)
S 144: 70 (B.C. distribution); **481** (Man.)
SS 17 (sawdust pollution effect on); **36** (Go-Home Bay, Ont.); **1208:** 149 (full description, B.C.)

Bass, striped (*Roccus saxatilis*) (*R. lineatus*; rockfish; striper)
C 1902–05: 85 (Canso, N.S.)
J 15: 573 (lethal hyperactivity); **16:** 824 (Miramichi R., N.B.)
B 155: 239 (full description)
S 234 (P.E.I.); **382** (introduction into California); **587** (Minas Basin)

Bass, white (*Roccus chrysops*) (*Lepibema chrysops*)
CCG 4: 10 (smoked); **5:** 1 (composition of whole, wastes & fillets)
CNG 64: 72 (productive capacity)

Basu, Satyendra Prasanna
J 16: 175 (O_2 & CO_2 in fish respiration)

Bate (*see* Leather; Skin)

Bateman, Jack Edward
S 588 (salmon gastrointestinal & urinary radiography)

Batfish, Atlantic (*Dibranchus atlanticus*)
J 20: 1513 (new N.S. record)
B 155: 424 (full description)

Bathophilus flemingi (*see* Dragonfish, highfin)

Bathyagonus nigripinnis (*see* Poacher, blackfin)

Bathylagus benedicti (*see* Blacksmelt, goitre)

Bathylagus euryops (*see* Blacksmelt, goitre)

Bathylagus milleri (*see* Blacksmelt, stout)

Bathylagus pacificus (*see* Blacksmelt, slender)

Bathylychnops exilis (a pelagic fish)
J 19: 307 (NE Pac. distribution)

Bathymaster signatus (*see* Searcher)

Bathymetry (*see* Distribution, depth; Limnology; Oceanography)

Batillaria cumingi (a marine gastropod)
J 21: 1155 (introduction & distribution, B.C.)

Battle, Helen Irene
C 4: 495, 501 (skate physiology); **5:** 109, 361 (rockling biology); **7:** 255 (molluscs maturation & spawning)
J 1: 145, **2:** 401 (herring feed & digestion); **6:** 252 (shock effect on teleost hatching); **17:** 245 (goldeye egg development)
PRA 3: 5 (moon re mussel edibility); **11:** 12 (Bay of Fundy hake fishery), 14 (sardine stomach content emptying rate)
S 33 (temperature effect on muscle & nerve tissue); **271** (Atl. salmon embryology); **474** (oyster digestive tract anatomy); **561** (oyster gastric shield composition); **829** (oyster gonad cyclic changes)
SS 738 Atl. salmon hepatogenesis)

Batton, W. N.
SS 1325 (ICNAF Canadian groundfish length frequency data)

Baumann, Emil Jacob
C 1918–20: 133 (canned dogfish analysis)

Bay of . . . . (*see* name of bay)

Bayliss, L. E.
S 100 (*Pecten* adductor mechanism)

Beall, Desmond
J 3: 177 (pilchard reduction effluent analysis); **4:** 478 (seasonal variations in B.C. herring composition)
B 35 (pilchard reduction effluent analysis); **39** (pollution caused by pilchard reduction)
PRP 20: 14 (pilchard reduction effluent losses); **37:** 19 (herring proximate analyses)

Beak, Thomas William
J 15: 559 (pollution toleration of fishes)

Bean, Barton Appler
SS 187 (collection of Vancouver Is. fishes)

Bear
J 11: 310 (repellent effect of paw to salmon)
S 693 (practical application of paw repellent effect to salmon)
SS 111 (Hudson Bay)

Bear Lake, B.C. (*see* Skeena River drainage system lakes)

Beardfish, stout (*Polymixia nobilis*)
B 155: 229 (full description)

Beardworm
SS 1344 (*Galathealinum* new species)

Beatty, Stanley Albert
C 8: 531 (artificial horn from fish muscle)
J 3: 77, **4:** 63, 229, 412, **5:** 32, 203 (fish spoilage mechanisms & estimation)
B 100: iv; **103:** v (foreword); **112** dried salted fish processing)
PRA 2: 12 (cause & prevention of drip); **5:** 14, **9:** 6, **10:** 8 (fish meal in livestock feeding); **6:** 14 (reddening of salt mackerel); **14:** 14 (handling shucked scallops); **15:** 4 (fish spoilage factors); **20:** 3, **27:** 10 (measuring fish spoilage); **31:** 3 ("putty" fish); **39:** 9 (fish smoking principles); **42:** 6 (cholesterol from fish meal), 10 (air transport of fish); **43:** 13 (icing of refrigerator cars)
CHO 36 ("putty" fish); **37** (maggots in smoked herring)
SS 633 (chemistry in fisheries); **869** (N.S. fisheries research)

Beaufort Sea (*see also* Oceanography, Arctic)
J 14: 731 (oceanography)
S 471 (submarine topographic features)

Beaver Lake, B.C. (*see also* Okanagan Lake)
B 56: 21 (limnological & biological survey)

Beaver River, Ont.
J 19: 989 (trout & sculpin furunculosis)

Bedford, Robert H.
C 6: 417, 423 (deep-sea bacteria sampler); **7:** 139 (*Pseudomonas* viability in formaldehyde), 425 (iced halibut bacterial discoloration), 431 (N Pac. bacteria)
B 29, 49 (preventing halibut deterioration)
PRA 6: 3 (bacteriology of icing fish on vessels)
PRP 6: 3, **7:** 3 (halibut yellow discoloration control); **9:** 19, **11:** 14 (marine bacteria & their growth); **18:** 7 (fish rusting in cold storage); **20:** 9 (fresh halibut care on vessel); **22:** 14 (bacteria re cold storage); **23:** 22 (crystals in canned salmon); **27:** 11 (fresh & frozen fish discolorations); **33:** 23 (halibut gut bacteria)
S 156 (ice glaze for frozen fish; re patent, *see* **PRP 27:** 15, **35:** 24)
SS 360, 396, 445, 474, 525, 526 (preserving fresh fish at sea); **473, 527** (bacteriology re fish preservation); **581** (halibut catching & marketing)

Beef
J 7: 35 (protein biological value), 51 (sulphur-containing proteins), 74 (B vitamins); **8:** 117 (liver in salmonid fry rations); **12:** 641 (liver extracts & hydrolysates)

Beetles (*see* Insects)

Beeton, Alfred Merle
J 17: 517 (*Mysis* vertical migration)

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Behaviour (*see also* Guiding; Migration; Territorialism; *also* headings listed under heading Reaction of organisms; *also* under name of organism, particularly salmon and trout species, for which the references below are not exhaustive)
J 8: 241, **11**: 69, **13**: 309, **17**: 655, **18**: 1159, **19**: 137, 327, 1047, **20**: 287, 919, **21**: 995 (Pac. salmons); **16**: 269, **18**: 1159, **19**: 201, 625, **20**: 769 (trouts); **16**: 269 (shiners); **17**: 625 (breeding Pac. crab), 689 (captive herring); **19**: 625, **20**: 1245 (Atl. salmon); **21**: 291 (Daphnia vertical movement re light), 591 (teleost retinomotor cycles), 613 (net avoidance by carp, etc.), 1453 (black-banded tetra vision & schooling)
PRA 7: 6 (salmon fry); **16**: 7 (cod); **50**: 17 (softshell clam); **43**: 9 (speckled trout)
PRP 113: 6 (spawning pink salmon), 8 (pink salmon fry)
SS 403 (coregonids daily movements); **493, 494** (Atl. herring movements), **509** (long-finned squid); **568, 964, 991** (Pac. salmons); **743, 991, 1244** (Atl. salmon); **762** (Pac. crab); **1207, 1282, 1283, 1284** (reproductive and aggressive of Atl. cod)

Belcher Islands, Hudson Bay (*see also* Hudson Bay)
CAG 6 (sea mammal netting)

Bell, Frederick Heward
J 15: 625 (ocean climates re fish yields)

Bell, Gordon Russell
J 18: 559 (pink salmon kidney disease); **19**: 515 (lingcod gill parasites); **21**: 711 (salmon blood sampling technique)
B 148 (anaesthetics for fish)
S 588 (salmon gastrointestinal & urinary radiography); **752** (diatom spines penetrate lingcod gills)

Bell, Hugh Philip
C 8: 63 (Hudson Bay marine algae)
S 46 (seasonal disappearance of tidepool algae)
SS 333 (seaweeds & their uses); **446, 447, 495** (Canadian Atl. marine algae distribution, prevalence, ecology)

Bell, John Milton
B 92 (freshwater fish as mink feed)

Bell, Milo C.
J 17: 507 (Passamaquoddy tidal power project fish passage)

Bell, William Harold
J 20: 1197 (tidal calibration of hydrographic model)
CPO 1961-23, 1962-1 (Hecate Strait model instrumentation); **1964-6** (radiation thermometry in atmosphere)
S 857 (Hecate model stilling-well design)

Bella Coola, B.C., region
PRP 102: 16 (sockeye age & size)

Bellamy, Denis
S 726 (Atl. hagfish blood corticosteroids)

Belle Isle, Strait of (*see also* Canadian Fisheries Expedition; International Commission for the Northwest Atlantic Fisheries; Labrador, Newfoundland; Oceanography, Atlantic (NW coastal waters))
C 3: 179, 331 (Entomostraca & other plankton); **7**: 203 (fishes)
J 8: 134 (amphipods); **11**: 198 (oceanography & fisheries), 239 (plankton), 245 (fishes), 431 (appendicularians); **15**: 1163 (dominant current flow)
B 18 (cod)
S 836 (November marine birds)
SS 282 (cod re oceanography)

"Belly-burn" (autoproteolysis)
PRP 50: 14 (of herring); **104**: 16 (of salmon)

Beluga (*Delphinapterus leucas*) (white whale; beluga whale)
J 11: 267 (parasite); **14**: 92 (NW Atl.); **15**: 1 (*Porrocaecum* parasite)
B 59, 89 (oils; *see* their indexes); **94**: 25 (arctic & subarctic); **98** (Hudson Bay)
PRP 51: 18 (liver oil vitamins)
CAG 6 (netting in Hudson Bay); **7** (E coast); **8** (Canadian arctic biology & hunting)
CNG 32R: 14 (description); **64**: 57 (productive capacity)
S 728 (pilot plant for processing)
SS 111, 117 (Hudson & James bays); **1021** (Bay of Fundy occurrence); **1040** (louse)

Bennett, Edwin Bertram
J 16: 565 (NE Pac. oceanographic features)
PRP 92: 6 (B.C. coastal temperatures re tuna)

Bensley, Benjamin Arthur
C 1901: 59 (alewife in sardine industry); **1911–14(II):** 1 (Georgian Bay fishes)
SS 41 (Georgian Bay Biological Station)

Benson, Clara Cynthia
C 1: 401 (urea in fresh & frozen dogfish)
S 63 (fish muscle *p*H)
SS 276 (chemical changes in muscle rigor)

Benthodesmus simonyi, B. atlanticus (*see* Frostfish)

Benthos (*see* Fauna; Feed studies; Flora; *also* kinds of marine and freshwater bottom organisms)

Benthosema glaciale (*see* Lanternfish, glacier)

Bentinck Inlet, B.C.
J 14: 605 (physical oceanography)

Benzoic Acid and Sodium Benzoate (*see* Preservatives)

Berardius bairdi (*see* Whale, Baird's beaked)

Bere, Ruby
C 4: 175 (Jasper Park lakes leeches); **5:** 423 (Passamaquoddy Bay fishes parasitic copepods)

Berg, Lev Semënovich
J 16: 515 (vernal & heimal fish races; correction on p. 930)

Bergall (*see* Cunner)

Bering Sea and Strait (*see also* Oceanography, Pacific (N & NE open waters); Oceanography, Arctic)
J 15: 625 (cod catches)
PRP 81: 79 (Canadian–U.S.A. oceanographic expedition, 1949)
SS 740 (Polychaeta); **1047** (Canadian-U.S.A. 1949 expedition); **1112** (U.S.S.R. plan for damming)

Berkeley, Alfreda Alice (*see also* Needler, Alfreda Berkeley)
C 3: 317 (B.C. Ophiuroidea); **6:** 79 (B.C. pandalids post-embryology)
PRP 4: 9 (B.C. shrimps)
S 93 (*Pandalus danae* sex reversal)
SS 317 (*Pandalus* musculature); **334** (B.C. commercial shrimps)

Berkeley, Cyril J.
C 1: 71 (Strait of Georgia dissolved oxygen); **2:** 503 (Pac. kelps organic constitution); **6:** 13 (symbiosis of *Beroe* with flagellate); **7:** 309 (W coast Vancouver Is. littoral Polychaeta)
J 6: 129 (Hudson Bay Polychaeta); **8:** 488 (*Trypanosyllus ingens*); **10:** 85 (*Micronereis nanaimoensis*); **11:** 326 (*Dodecaceria fewkesi*), 454 (Canadian Polychaeta); **13:** 233 (Canadian & Alaskan polychaetous annelids), 541 (Vancouver Is. Polychaeta); **15:** 765 (as volunteer researcher at Nanaimo Biological Station), 801 (arctic Polychaeta)
PF 9b(1) (Polychaeta Errantia); **9b(2)** (Polychaeta Sedentaria)
S 10 (manganese in annelid tubes); **13** (marine animal pentoses); **14** (furfural. etc. in polychaete tube); **16** (crystalline style re molluscan respiration); **22** (lingcod pancreatic tissues pentoses); **106** (Chaetopteridae intestinal wall green bodies); **153** (Spionidae Polychaeta); **181** (Canadian W coast Polychaeta); **199** (*Rhamphobrachium* anterior setae regeneration); **307** (W Canadian Polychaeta Sedentaria); **320** (*Potamethus elongatus*); **353** (*Nereis succinea* swarming); **447** (NE Pac. *Epidiopatra*); **451** (new E Canada Polychaeta); **491, 530, 616** (NE Pac. pelagic Polychaeta); **597** (central E Pac. coastal Polychaeta); **660** (California to Peru Polychaeta); **694** (B.C. & W Arctic Polychaeta); **732** (Spionidae larvae neotony); **771** (toxicity of plankton to *Cristispira*); **830** (pelagic & swarming Peruvian Polychaeta); **831** (*Lycastopsis catarractarum* proboscis)

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SS 188 (Strait of Georgia marine bacteria); **189** (marine animal pentosans); **190** (kelp pentosans & enzymes); **211** (dogfish pancreas pentose nucleosides); **212** (pelecypod molluscs anaerobic respiration); **288** (iceworms & snow life); **420** (NE Pac. Capitellidae & new genus); **448, 449, 528** (molluscan crystalline style oxidase); **529, 669, 725, 740, 770, 794** (polychaetous annelids); **739** (Vancouver Is. *Ctenodrilus*); **1206** (*Cristispira* in clam crystalline style); **1279** (indigo content of woad)

Berkeley, Edith
C 1: 203, **2:** 285, **3:** 405, **4:** 305, **6:** 65, **7:** 309 (Vancouver Is. coastal polychaetous annelids)
J 6: 129 (Hudson Bay Polychaeta); **8:** 488 (*Trypanosyllus ingens*); **10:** 85 (*Micronereis nanaimoensis*); **11:** 326 (*Dodecaceria fewkesi*), 454 (Canadian Polychaeta); **13:** 233 (Canadian & Alaskan polychaetous annelids), 541 (Vancouver Is. Polychaeta); **15:** 765 (as volunteer researcher at Nanaimo Biological Station), 801 (arctic Polychaeta)
PF 9b(1) (Polychaeta Errantia); **9b(2)** (Polychaeta Sedentaria)
S 65 (NE Pac. Chaetopteridae); **153** (Spionidae Polychaeta); **181** (Canadian W coast Polychaeta); **199** (*Rhamphobrachium* anterior setae regeneration); **307** (W Canadian Polychaeta Sedentaria); **320** (*Potamethus elongatus*); **353** (*Nereis succinea* swarming); **451** (new E Canadian Polychaeta); **491, 530, 616** (NE Pac. pelagic polychaeta); **597** (central E Pac. coastal Polychaeta); **660** (California to Peru Polychaeta); **694** (B.C. and W arctic Polychaeta); **732** (Spionidae larvae neotony); **830** (pelagic & swarming Peruvian Polychaeta); **831** (*Lycastopsis catarractarum* proboscis)
SS 260 (echinoderm–annelid commensalism); **420** (NE Pac. Capitellidae & new genus); **529, 669, 725, 740, 770, 794** (polychaetous annelids); **582** (a W Canadian *Saccocirrus*); **870** (*Meriochele heeri* morphological characteristics); **1280** (*Odontosyllis phosphorea* swarming)
J 20: 1349 (obituary of)

Bermuda (*see also* Oceanography, Atlantic (NW open waters))
J 7: 363 (lunar cycle of *Odontosyllis* swarming)

Berrill, Norman John
C 4: 143 (*Lophius* spp. validity & development)
S 60 (ascidians validity & identification); **78** (temperature effect on ascidian digestion); **95** (physiology of simple ascidians)

Berst, Alfred Hewitt
J 20: 735 (fish distribution in gill nets)

Beryx dectactylus (*see* Alfonsin a Casta Larga)

Betaine
J 17: 895, **18:** 285 (lobster biosynthesis of; correction on **21:** 1553)

Bethune, Winona Jean (*see also* Trason, Winona Bethune)
CNG 12, 17: 10 (log records of albacore catches)

Bevan, Donald Edward
J 18: 337 (aerial counting of spawning salmon)

Beveridge, James MacDonald Richardson
J 7: 35 (fish flesh proteins biological value), 51 (fish flesh proteins sulphur distribution), 74 (fish flesh B vitamins)

Beverton, R. J. H.
SS 1321 (ICNAF fishery assessment re regulations)

Bhatia, Darshan Singh
J 16: 1 (antibiotic for India fish quality retention); **17:** 475 (iced India shrimp spoilage)

Biapocrisis (*see also* Growth; Mortality; *also* headings listed under Reactions of organisms)
S 289 (method in ecology)

Bible
SS 580 (re scaly vs. non-scaly food fishes); **699** (aquatic organisms mentioned in)

Bibliographies, review (*see also* heading Publication lists)
B 68: 345, **68R:** 412 (B.C. marine fishes); **134:** 104 (Canadian Atl. oceanography); **155:** 436 (Canadian Atl. marine fishes)

PRP 23: 7 (marine oils & vitamins, 1927–35); **24**: 11 (fishery products & by-products, 1929-34)

CHN 5 (Atl. salt cod); **19** (fishery by-products, 1950–63)

CSG 32 (oyster growing, 1931–58); **41** (oyster growing, 1947–62)

S 409 (Pac. salmons biological research); **410, 585** (Canadian Pac. oceanography, 1949–57); **483, 590, 773** (Canadian oceanography, 1954–1963); **851**: 71 (B.C. fisheries resources); **858** (suspended organic matter in seawater)

SS 1256 (Atl. halibut)

Bideford River, P.E.I.

J 4: 287 (oyster larvae); **5**: 236 (oceanography under ice)

Biely, Jacob

J 18: 113 ("liquid herring" protein feed value); **20**: 229 (herring meal nutrient composition)

PRP 87: 42, **89**: 79, **90**: 10, **92**: 10, **94**: 27, **99**: 12, **101**: 27, **108**: 24, **111**: 23 (B.C. fish meals & condensed solubles nutritive values); **113**: 3 (condensed herring solubles in turkey poult rations; correction on **J 16**: 931)

CVG 25 (herring meal lipids nutritional & chemical changes); **26** (herring meal nutrient composition)

S 373, 425, 641, 704 (B.C. herring meal nutritive value & effects on); **593, 613** (dietary marine fish oils re cholesterol metabolism); **636** (salmon plasma steroid activity); **651** (turkey reproductivity); **667** (cholesterol metabolism factors in chickens); **809** (excess vitamin A effect on hen egg production)

SS 959 (B.C. herring meal folic acid factors)

Big Creek, Ont.

PRC 2: 14 (sea lamprey ammocoete biology)

Bigelow, Henry Bryant

AF 12 d, e, f (Atl. lampreys, sharks, rays, chimaeroids)

SS 140 (new Anthomedusae genus)

Bigelow, Norman Kay

C 1921: 87 (Lake Erie ciscoes feed)

SS 226 (SW Ont. Cladocera)

Bigeye (*see* Whiting (Pacific))

Bile

J 13: 183, 195 (to differentiate halophilic bacteria)

PRA 62: 10 (recovery from cod gall bladders); **65**: 21 (acids in cod)

PRP 70: 18, **71**: 5, **80**: 47 (economics of recovery for pharmaceuticals)

S 70 (in various fishes)

"Bilgy" odour in fish (*see* Odours in fish quality assessment)

Bilinski, Edward

J 16: 747 (cod muscle proteolysis); **17**: 895, **18**: 285 (trimethylamine oxide re lobster betaine synthesis; **18**: 851 (salt cod chemistry); **19**: 505 (marine Crustacea choline metabolism); **21**: 653 (lipids utilization by fish), 765 (trimethylamine oxide precursors)

S 700, 832 (utilization of lipids by fish)

SS 1233 (salt effect on cod muscle spoilage)

Billfish (*see* Saury, Atlantic)

Bilton, Thomas Herbert

J 21: 1267 (scale key for Pac. salmons)

PRP 87: 39, **92**: 18, **104**: 38 (trout sport fishery & creel census, Lakelse Lake, B.C.)

CNG 52 (salmon age & sex composition sampling)

Bio-index

J 13: 515 (in B.C. lake productivity)

Bioassays (*see also* Solubles, condensed; Vitamin)

C 1917–18: 167 (goldfish, for salmon pathogens)

J 5: 211 (man, for trimethylamine oxide); **6**: 63 (rats & cats, for nitrite as preservative); **11**: 57 (rats & goldfish, for salmon pituitary hormones), 63 (chicks, for salmon androgens)

B 7: 17 (man, for insulin from fishes)

S 796 (*Daphnia*, for pulpmill effluent toxicity)

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Biochemistry (this listing is not exhaustive; the following are series or reviews; *see also* names of compounds, fishes, organs, and other cognate entries such as Growth; Maturation)

J 16: 235, 421, 559, **17**: 113, 125, 347, 565 (spawning migratory sockeye salmon; corrections on **16**: 930 and **17**: 943); **17**: 323 (maturing coho salmon); **18**: 321 (sockeye rigor); **20**: 95 (sockeye feeding after advanced gonad development)

S 517 (review of fish biochemistry & molluscan sterols); **520, 536, 537, 539, 547, 573, 605** (spawning migratory sockeye); **626** (herring, coho, sockeye (review))

Biological Board of Canada (*see also* Fisheries Research Board of Canada; History; Stations; *also* the Annual Reports of the Board)

S 258 (role in fisheries research)

SS 75, 263, 268, 308 (work of)

Biological Stations of the Board (*see* Stations)

Biology (*see also* cognate subjects)

SS 373, 431 (re oceanography); **789** (of fish); **1028** (history & context of)

Bioluminescence

J 7: 363 (*Odontosyllis enopla* polychaete); **9**: 223 (Labrador Sea plankton)

Biometry (*see* Morphometry; Size; and other cognate subjects)

Biosynthesis traced by radioactive isotopes

J 17: 895, **18**: 285, **19**: 505 (of trimethylamine oxide in lobster & other crustaceans; correction on **21**: 1553); **21**: 505 (of marine primary products)

S 619, 637, 659 (sterols in butter clam): **621, 622, 647** (re salmon inositol metabolism); **700, 832** (fatty oxidation by trout & salmon muscle); **733** (gluconic acid metabolism in trout); **753, 754, 755** (marine particulate organic carbon production); **770** (sockeye hormone metabolism): **818** (sockeye milt deoxyribonucleic acid): **828** (photosynthesis diurnal variation)

Biota

SS 269 (tidepools); **275** (granite & limestone pools)

Biotin (*see also* Vitamin B group)

J 14: 61 (in lake seston, natural waters, diatoms, soils); **20**: 229 (in B.C. whole herring meal)

S 774 (microbiological assay for, in seawater)

Birds (general) (*see also* Birds, predator; *also* names of birds)

C 1906–10: 65 (of Gaspé, Que.)

J 12: 491 (of Ungava Crater vicinity)

B 58 (habits, N.S.)

S 548 (marine, off N.S.); **600** (distribution & migration, Foxe Basin, N.W.T); **836** (November marine; Strait of Belle Isle)

SS 111, 119 (Hudson & James bays); **687** (Lake Nipissing, Ont., vicinity); **911** (Ungava Bay region); **1409** (Foxe Peninsula, N.W.T)

Birds, predator (*see also* Birds (general); *also* common names of individual species)

C 2: 417 (on hatchery salmon fry); **3**: 373 (on P.E.I. trout)

J 11: 388 (on salmon & chub); **12**: 216 (control effect on N.B. trout)

B 17 (on B.C. herring); **58** (on Atl. salmon, control)

PRP 50: 21 (on B.C. clams); **77**: 105 (on B.C. salmons)

SS 205 (on chum salmon fry)

Bishop, Yvonne Millicent Mahala

J 12: 571 (*Anasakis* larvae in B.C. herring; statistics); **16**: 73 (fish mortality estimate errors)

B 110 (Board publications titles & index. 1901–54)

Bissett, Helen Mary (*see also* Bluhm, Helen Mary)

PRP 83: 35. **93**: 23. **99**: 18. **100**: 12. **102**: 4, 14 (uses, effectiveness and stability of antibiotics as preservatives); **85**: 83, **87**: 42 (B.C. fish meals & solubles nutritive values); **88**: 67 (rancidity control); **98**: 3 (cause & control of Maillard browning of flesh)

S 337, 375 (antibiotic preservation of fish & beef); **374** (heat effect on herring meal nutritive value): **404** (antibiotic ices)

Bissonnette, Thomas Hume

C 1911–14(II): 213 (Georgian Bay fleshy fungi & myxomycetes)

Bite of marine organisms
B 115: 14 (bloodworm, poisonous to man)

Bitners, Igor Imants
J 16: 235 (spawning migratory sockeye biochemistry; correction on **16**: 930); **17**: 113 (maturing sockeye internal organs analyses; correction on **17**: 943)
S 536 (spawning migratory sockeye biochemistry); **664, 668** (salmon plasma hormone isolation)

Bivalves (*see also* Clam; Mussel; Oyster; Pelecypoda; Scallop; Shipworm; *also* other cognate headings)
C 1906–10: 221 (recognition of larvae in plankton); **4**: 397 (lethal temperatures for lamellibranchs); **7**: 255 (rhythmic sexual maturity & spawning)
B 77 (larvae, P.E.I.)
S 16 (crystalline style re respiration); **623** (arctic)
SS 448, 449, 528, 1206 (crystalline style); **1262** (B.C. intertidal)

Bjerkan, Paul
SS 184 (Canadian Fisheries Expedition Atl. oceanography)

Black, Edgar Clark
J 10: 196 (lethal warmth for B.C. freshwater fishes); **12**: 917, **14**: 117, 645, 807, **15**: 573, **16**: 95, 391, 429, **17**: 487, **19**: 409, **21**: 255, 1539 (glycogen & lactate in blood & tissues of Pac. salmons & trouts as affected by hyperactivity; correction on **16**: 929)
B 80 (B.C. marine wood borers)
PRP 21: 7 (shipworm)
S 842 (fish-marking mortality aspects)

Black, Virginia Safford
J 8: 164 (Pac. salmon fry freshwater to seawater adaptation)

Black, William Francis
J 17: 763 (*Porrocaecum* life history)

Black Lake, N.B.
PRA 42: 7 (speckled trout angling yield)

Blackback (*see* Flounder, winter; Plaice, American)

"Blackberry" Atlantic cod
J 21: 423 (dimethyl sulphide in flesh)

Blackcod (*see* Sablefish)

Blackfin (*see* Tuna, blackfin)

Black-fish (*see* Tautog)

Blackfish (*see* Whale, pilot)

Blackfish, Alaska (*Dallia pectoralis*)
B 94: 19 (description; revival after freezing)

Blacksmelt, goitre (*Bathylagus euryops*) (*B. benedicti*)
J 17: 235 (as redfish feed)
B 155: 124 (full description)

Blacksmelt, slender (*Bathylagus pacificus*)
B 68: 102, **68R**: 129 (full description)

Blacksmelt, stout (*Bathylagus milleri*)
B 68: 103, **68R**: 130 (full description)

Blackwood, Chesley M.
SS 1322 (endogenous proteolytic enzymes)

Bladder, gall (*see* Bile)

Bladder, swim (*see also* Isinglass)
J 15: 355 (haddock); **19**: 635 (Atl. herring); **20**: 108 (volume of, in dace)
SS 24 (a degenerate gland); **535, 584** (nematode parasite of, in salmon); **618** (development, in Atl. salmon)

Blair, Arthur Avery
J 1: 159 (Atl. salmon migration age); **5**: 440 (salmon scale regeneration); **12**: 682 (pulpmill pollution, Nfld.; correction on **J 14**: 997); **13**: 219, **14**: 135, 141 (salmon tagging)
NRB 12 (Nfld. & Labrador river obstructions to salmon); **13** (salmon off E coast of Nfld. & Labrador coast)
S 173 (age from landlocked salmon scales); **492** (counting fence of netting); **559** (back-pack fish shocker)
SS 634 (scales indicate Lake Ontario salmon are landlocked)

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Bleaching (*see also* Blanching; Decolorization (of oils); Pigment)
CGS 1, 3, 10 (Irish moss)

Blanching
PRP 43: 3 (of shrimps for freezing); **53:** 14 (of clams for canning)

Blennie-serpent (*see* Blenny, snake)

Blenny, belted (*see* Prickleback, ribbon)

Blenny, black (*see* Prickleback, black)

Blenny, bracketed (*see* Gunnel, crested)

Blenny, burrowing (*see* Graveldiver)

Blenny, crested (*see* Prickleback, cockscomb)

Blenny, decorated (*see* Prickleback, decorated)

Blenny, eel (*see* Prickleback, snake)

Blenny, fucus (*see* Gunnel, rockweed)

Blenny, long-snouted (*see* Prickleback, longsnout)

Blenny, ornamented (*see* Prickleback, mosshead)

Blenny, pen-point (*see* Gunnel, penpoint)

Blenny, rock (*see* Prickleback, rock)

Blenny, saddled (*see* Gunnel, saddleback)

Blenny, snake (*Lumpenus lumpretaeformis*) (*L. lampetraeformis;* blennie-serpent)
B 73: 8 (N Labrador larvae); **155:** 311 (full description)
SS 572 (2 new subspecies)

Blenny, white-barred (*see* Prickleback. whitebarred)

Blenny, Y- (*see* Prickleback Y-)

Blenny, Yarrell's (*Chirolophus ascani*)
B 155: 306 (full description)

Blepsias bilobus (*see* Sculpin, crested)

Blepsias cirrhosus (*see* Sculpin, silver-spotted)

Bligh, Emerson Graham
J 13: 569 (frozen redfish fillet storage); **14:** 637 (frozen lobster meat discoloration); **16:** 449 (cod & haddock reddish flesh); **18:** 143 (frozen cod lipid hydrolysis)
PRA 71: 17 (frozen cod fillets fat hydrolysis)
S 577 (lipid extraction & purification method)

Blister-back (*see* Pollock (Atlantic))

Bloater (*Coregonus hoyi*)
J 18: 679 (osteology; phylogeny)

"Bloater"; "bloater" paste
PRP 63: 38 (paste, from herring; correction on **65:** 66)
CHO 37 (prevention of maggots in); **38** (smoking procedure for herring)

Blood (*see also* Heart; Hemoglobin; Physiology, circulatory system)
C 5: 475 (skate, salinity effect on concentration); **6:** 341 (dogfish, creatine in)
J 6: 72 (nitrite effect on hemoglobin), 152 (lobster: P content during mating); **12:** 917, **14:** 117, 645, 807, **15:** 573, **16:** 95, 321, 391, 429, **17:** 487, **19:** 409, **21:** 1539 (salmon & trout: effect of activity on blood carbohydrates and lactic acid; correction on **16:** 929); **15:** 38 (trout: lactic acid in; correction on **16:** 386); **17:** 125 (sockeye: plasma constituents), 329 (coho: plasma & serum constituents), 347 (sockeye: histidine content), 903 (cholesterol levels); **19:** 619 (trout & salmon: *p*H re mortality); **20:** 845 (measuring buffer capacity); **21:** 239 (sea lamprey serum protein patterns), 691 (Pac. sardine subpopulations serological differentiation), 711 (sampling in free-swimming salmon)
PRP 112: 6 (sockeye: steroid hormones)
S 26, 34 (effect of isletectomy & asphyxia on sugar); **59** (dogfish: reducing substances); **207** (hyperactivity lethal effects); **520** (sockeye plasma cholesterol); **564, 573, 604, 620, 636, 664, 665, 692** (sockeye plasma hormones); **593** (fish-oil feeds re serum cholesterol); **708** (steroid hormones in plasma of various fishes); **726** (Atl. hagfish: corticosteroids in); **776** (spawned sockeye: testosterone in); **856** (Atl. salmon: hormone assaying)

SS 37 (origin of inorganics in vertebrate & invertebrate); **242** (are fish really cold-blooded?); **478** (skate: osmotic pressure); **554, 555** (of seal)

Bloodworm (*Glycera dibranchiata*)
J 15: 1153 (Maritimes industry for bait)
B 115 (biology; N.S. fishery as bait)
PRA 58: 11 (Maritimes industry for bait)

Bloom (of Algae)
PRP 65: 70 (re lake fish mortality)

Blubber (*see also* Oils and fats: marine mammalian; *also* names of marine mammals)
J 20: 245 (oil analysis, bottlenose whale)
B 89 (sea mammals oil; *see* its index)
PRP 14: 14, **71**: 5 (porpoise, oil yield)
CAG 1: 60 (yield, ringed & bearded seals)
S 819 (pilot whale, fatty acids); **839** (Atl. harbour seal, fatty acids)
SS 936 (seal, hydrogenation of oil)

Blueback, Bean's (*Scopelogadus beanii*)
B 155: 288 (mention of)

Blue-bottle fish (*see* Man-o'-war fish)

Bluefin (*see* Tuna, bluefin (Atlantic))

Bluefish (*Pomatomus saltatrix*)
J 16: 510 (N.S. records)
B 155: 245 (full description)

Bluefish, Boston (*see* Pollock (Atlantic))

Bluegill (*Lepomis macrochirus*)
J 11: 608 (cannibalism); **12**: 447 (population estimates); **16**: 147 (associations in Ont. streams)
B 119 (survival & fishing rates estimates)
S 445 (lethal temperature limits)
SS 1089 (Indiana lake angling & management)

Bluhm, Helen Mary (*see also* Bissett, Helen Mary)
PRP 106: 8 (CTC effect on food-poisoning bacteria)
S 466 (bacterial spoilage antibiotic control); **494** (marine fish muscle nucleic acids)

Bluntnose (*see* Moonfish, Atlantic)

Boarfish (*Pseudopentaceros richardsoni*)
J 16: 384 (records off B.C.)
B 68R: 219 (description)

Boar's Back Lake, N.S.
J 18: 463 (morphology)
PRA 20: 6 (fish production)
S 206 (fish populations); **229** (fish poisons for)

Boats (*see* Holds; Icing; Seawater, refrigerated; Vessels, research; etc.)

Bocaccio (*Sebastodes paucispinis*)
B 59: 70, **89**: 338 (liver vitamin oil); **68**: 206, **68R**: 251 (description)

Body fluid regulation (*see also* Acclimation; Salinity, reactions to)
J 20: 1355 (smolting Atl. salmon)
SS 554 (seals)

Body oils (*see* Oils and fats: fish body)

Body oxygen demand (*see* Activity; Oxygen, dissolved; Pollution)

Body proportions (*see also* Morphology; Size)
SS 890 (fishes environment effect on)

Bodying (of oils) (*see also* Oils and fats: fish body; Paint; Varnish)
C 8: 321 (pilchard)
J 19: 839, **20**: 89 (air-blowing of cod-liver)
B 59, 89 (*see* under Polymerization and Polymerized oils in their indexes)
PRP 24: 3, **25**: 13 (pilchard)
CHN 7 (air-blowing of cod-liver)

Bogoslowski, Anthony Steven
SS 1281 (freshwater fish bacteria)

Boleosoma nigrum (*see* Darter, Johnny)

Bolton, Lloyd Lawrence
B 16 (Fraser R. sockeye tagging)
S 35: 60 (sixgill shark lymphoid organ & spleen structure)

Bolton, Reginald Spence
J 4: 162 (penetrometer for canned salmon firmness)

PRP 33: 20 (free juice in canned salmon)

Bonaparte, Lake, N.B.
PRA 36: 6 (trout angling yields)

Bonavista, Nfld. (*see also* Newfoundland)
J 13: 219 (salmon tagging)
B 109 (longlining tests)

Bond, Ronald Maurice
S 518 (1957 N.B. toxic shellfish epidemic)

Bone (*see also* Mineral constituents; Osteology; Otoliths; Vertebrae)
J 2: 439, 457, 461, 463, 473 (percentage in canned salmon, canned pilchard, fresh lingcod); **17**: 913 (collagen in Pac. herring); **18**; 483, 495, 893 (percentage in Atl. fishes)
B 136: 7 (cleaning & preparation for study)
PRP 3: 5 (glue from); **16**: 3, **19**: 20, **41**: 17 (canned salmon); **37**: 19 (proportion in Pac. herring); **73**: 58 (separation from cooked edible waste; bone meal); **75**: 48 (proportion in freshwater fishes)
S 654, 655, 656, 657, 658, 769, 859 (skeletal anatomy re Pac. salmon stocks)

Bonefish (*Albula vulpes*)
B 155: 85 (full description)

Bonito, Atlantic (*Sarda sarda*) (common bonito; horse mackerel; skipjack)
J 16: 509 (N.S. records), 824 (Miramichi estuary, N.B.); **17**: 732 (off Lunenburg, N.S.)
B 7: 20 (Langerhans islets tissue); **155**: 282 (full description)
CFI 10 (canning)
CSG 43 (description)
S 226 (off N.S.)
SS 737 (muscle autolysis)

Bonito, blackfin (*see* Tuna, blackfin)

Bonito, common (*see* Bonito, Atlantic)

Bonito, oceanic (*see* Tuna, skipjack)

Bonito, Pacific (*Sarda lineolata*) (*S. chiliensis*)
B 68: 164; **68R**: 226 (full description)

Bonito, striped (*see* Tuna, skipjack)

Booth, Kenneth Smith
CPO 1959-15 (oceanographic observations from NE Pac. weathership)

Bordeleau, Michel André
J 15: 555 (salt cod phospholipid fatty acids); **18**: 851 (salt cod chemistry)
PRA 66: 16 (fat changes in fish salting)

Boreogadus saida (*see* Cod, arctic)

Borers (*see* Gribble; Shipworm; Wood borers)

Boron compounds
J 16: 7 (in Atl. coastal seawater)

Bosmina (*see* Cladocera)

Boston, Noel Edward James
J 20: 1197 (tidal calibration of Hecate Strait oceanographic model)
CPO 1960-17, 1961-22, -23, 1962-1 (Hecate model description & instrumentation)
S 684 (Hecate model description)

Bothragonus swanii (*see* Poacher, deep-pitted)

Bothrocara molle (*see* Eelpout, soft)

Bottle, drift (*see* Drift, determination of)

Bottle, water-sampling (*see* Sampling devices)

Bottom, lake (*see* Limnology; Lakes)

Bottom, ocean (*see* Oceanography; physiography; *also* cognate subjects)

Bottom, fauna (*see* Fauna, bottom)

Bottom sampling (*see* Sampling devices)

Botulism and *Botulinus* (*see also Clostridium* species)
PRP 106: 8 (proper processing procedures to inhibit, in fish products)
CHN 14 (significance in Canadian fishery products)
S 438, 466 (suppression of bacteria by CTC antibiotic)

Boughton, Rex Vivian
PRP 39: 21, **41**: 10, **45**: 12 (B.C. herring runs); **49**: 11 (slow-growing B.C. herring)
S 254, 260 (B.C. herring tagging, apparatus & recoveries)

Boulanger, J. M.
SS 1335 (ICNAF Canadian groundfish length frequency data)

Bounty
PRP 72: 36 (on Pac. harbour seals)
CSG 18 (on Atl. harbour seals)

Bourne, Neil F.
J 17: 291 (*Pontonema* nematode clam parasite)
CGS 33 (Georges Bank scallop fishery outlook); **35** (Gulf of St. Lawrence 1961 scallop exploration)
SS 1234 (Georges Bank scallop dragger selection)

Bousfield, Edward Lloyd
J 8: 134 (Belle Isle Strait pelagic Amphipoda); **12:** 342 (Miramichi physical features), 762 (Hudson Strait cirripede Crustacea); **19:** 1163 (amphipods in low-oxygen marine waters)
S 587 (upper Bay of Fundy fauna)

Bowfin (*Amia calva*) (lake dogfish)
C 1911–14(II): 12 (Lake Huron)
B 7: 18 (insulin in)
CVI 12 (constituents; analysis; vitamin A)
SS 87 (cestode parasite of)

Bowhead (*see* Whale, bowhead)

Bowie, Donald J.
C 8: 207 (*Raja* arteries, conus, structure & stimuli)
S 57 (*Fundulus* digestive function)

Boyce, Farrell MacKenzie
CPO 1961-27 (NE Pac. oceanographic cruise); **1962-18** (N Pac. water mass transport calculations)

Boyce, Norbert Patrick
S 706 (staining small helminths)

Boyd, John William
J 19: 615 (antibiotics effect on fish quality tests); **21:** 37 (refrigerated brines irradiation)
PRP 96: 20 (Pac. cod shipment unusual odour); **96:** 25, **100:** 12 (aureomycin as preservative); **99:** 18, **102:** 14 (incorporating antiobiotics in ice blocks); **99:** 22 (mould inhibition); **102:** 4 (aureomycin effect on visceral bacteria); **105:** 12 (CTC for shucked oyster storage); **108:** 21 (rancidity control); **109:** 14 (whale carcass preservation with antibiotics)
CVI 20 (antibiotic treatment of whale carcasses)
CVG 31 (moisture loss from cartons of frozen fish)
S 375 (antibiotic preservation of fish & beef); **404** (antibiotic ices); **417** (mould & yeast inhibitors); **466** (bacterial spoilage antibiotic control); **468** (cooking effect on fish flesh CTC residues); **514** (tetracycline antibiotics comparative effectiveness)

Boyd, Sadie Nevin
C 1921: 125 (lobster muscle composition)

Boyland, Eric
S 100 (*Pecten* adductor mechanism)

Braarud, Trygve
J 1: 279 (Bay of Fundy plankton & oceanography)

Brachyiopoda
C 1917–18: 240 (Canadian)
S 587 (upper Bay of Fundy); **623** (arctic)

Brachyistius brevipinnis, B. frenatus (*see* Seaperch, kelp)

Brachymystax lenok (a salmonid fish)
J 18: 679 (osteology, phylogeny)

Brachyura (*see also* Crab; Crabs)
C 1917–18: 253 (E Canadian)

Bradelle Bank, Gulf of St. Lawrence
PRA 28: 214 (cod tagging)

Bradley, H. C.
SS 693 (estimating fish muscle decomposition); **737** (muscle autolysis of active vs. passive fish)

Brain
J 20: 679 (cod & goosefish tissue explant culture); **21:** 107 (neurosine oligopeptide isolation), 653 (salmon: fatty acid oxidation by tissue)
S 866 (trout, glycolytic enzyme in)
SS 380 (hagfish)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Brama rayi (*see* Pomfret, smallscale)

Brandt, A. V.
SS 1387 (fishing gear materials test methods)

Branion, Hugh
SS 361 (marketing of ling or burbot)

Bras d'Or Lakes, N.S.
J 12: 270 (oyster spatfall); **16**: 7 (sea-water composition, element ratios); **17**: 762 (*Porrocaecum* life history)

Brawn, Vivien Mavis
J 17: 689 (Atl. herring swimming speed), 699 (herring vertical distribution), 721 (herring temperature tolerance), 725 (herring survival re salinity), 735 (Bay of Fundy herring exploration); **19**: 635 (herring swimbladder functions)
SS 1287, 1282, 1283 (cod reproductive aggressive behaviour); **1284** (sound production by cod)

Bray, Joseph Russell
J 19: 489 (W Canadian Arctic *Mesidotea* isopod)

Breakage
PRA 54: 19 (clams during handling)
SS 727 (eyed salmon eggs)

Bream (*see* Redfish)

Bream, Ray's (*see* Pomfret, smallscale)

Brereton Lake, Man.
SS 300 (plankton)

Breton, Cape (*see also* Nova Scotia; Oceanography, Atlantic (NW coastal waters))
C 1918–20: 109 (list of fishes)
J 2: 255 (*Argulus canadensis*)
PRA 25: 3 (spring & summer cod fishery)
SS 974 (Greenland cod)

Brett, John Roland
J 8: 82, 103 (Lakelse L. limnology re sockeye), 178, 453 (Skeena R. sockeye biology); **9**: 265, **15**: 805 (Pac. salmon temperature tolerance); **10**: 548 (deflecting migrating salmon); **11**: 310, **20**: 287 (salmon olfactory & visual responses): **12**: 362 (salmon fry behaviour); **14**: 783 (pulp-mill effluent effects on salmon); **15**: 229 (salmon egg anoxia; correction on **16**: 386), 587 (salmon cruising speed vs. temperature), 815 (salmon retina structure, responses); **19**: 1025 (salmon respiratory metabolism); **21**: 1183 (young sockeye oxygen consumption)
B 114 (B.C. salmon research re hydro-electric development); **117** (guiding young Pac. salmon)
PRP 62: 4 (Lakelse L. salmon tagging); **66**: 12, **67**: 23, **68**: 55, **69**: 70 (Skeena R. system lakes limnobiology); **90**: 21, **98**: 10 (migrating Pac. salmon olfactory perception); **92**: 14, **99**: 24, **106**: 14 (guiding migrating salmon fingerlings); **95**: 53 (rate variation of salmon ascent up fish ladder); **108**: 27 (sodium arsenite toxicity to young salmon)
S 356 (salmon migration over high dams); **444** (migrating salmon olfactory perception); **445, 628** (fish thermal requirements principles); **503** (environmental stress implications & assessment)
SS 807 (goldfish heat-tolerance gain rate); **843** (young migrating salmon trap); **1149** (eye physiology); **1323** (young sockeye oxygen uptake re swimming speed)

Brevoorta tyrannus (*see* Menhaden, Atlantic)

Bridges, H. Francis G.
PRP 72: 3 (obituary of)

Briggs, John Cameron
J 16: 363 (bibliography about medaka)

Brill (Atlantic) (*see* Windowpane)

Brill (Pacific) (*Eopsetta jordani*) (petrale sole)
J 8: 77 (preventing flesh browning); **12**: 134 (corrosion of tags on); **13**: 357 (catches re air & sea temperatures); **14**: 953 (tagging); **21**: 335 ("milky" condition)
B 68: 316, **68R**: 188 (full description); **89**: 67 (liver oil vitamins); **126**: 29 (changes on storing in refrigerated sea-water); **139** (in B.C. trawl fishery)
PRP 40: 3 (key relation to flatfishes): **56**: 7 (dehydrated); **59**: 15, **83**: 35. **96**: 11 (bacteria re spoilage); **61**: 6, **68**: 43. **71**: 12 (liver oil); **62**: 10 (common names): **69**: 74 (liver vitamin re fish length); **70**: 23, **99**: 29, **100**: 16 (tagging & winter recaptures); **81**: 80 (mechanical washer):

92: 21 (quality after freezing at sea); **98**: 17 (availability re recruitment)

CNG 4 (nomenclature); **64**: 47 (productive capacity)

CNS 1 to **11** inclusive, **13** (B.C. trawl catches by areas, 1945–63)

CVI 8 (oil & vitamin A in liver)

S 290, 389, 453, 851: 40 (B.C. fishery); **434** (flesh Na & K content)

Brine freezing (*see* Freezing)

Brines; Brining (*see also* Canning; Cod, Atlantic (salted); Drip; Herring, salted; Marinating; Salt fish; Smoking)

J 5: 411 (re flesh swelling & drip); **9**: 388 (re cod muscle water transfer); **7**: 430 (re *Pseudomonas* growth in cod fillets); **19**: 437 (coliform bacteria in)

B 9: 10, **112**: 15 (Atl. cod); **19** (mackerel)

PRA (references are principally under Cod, Atlantic (salted))

PRC 1: 28, **2**: 37 (freshwater fish before canning)

PRP 13: 3, **17**: 8, **86**: 3, **92**: 3, 5 (for dry-salt herring); **36**: 7 (livers & intestines); **37**: 7, **39**: 13, **40**: 14 (fresh or lightly smoked fillets); **39**: 16 (sterilization with ultraviolet light); **40**: 6, **41**: 3, **42**: 10, **45**: 4, 18, **46**: 3, **52**: 3 (prior to smoking & canning); **42**: 16 (salt uptake during); **43**: 3 (shrimp for freezing); **43**: 10, **44**: 12, **45**: 19, **47**: 5, **48**: 19 (re fillet drip); **44**: 16 (with added nitrite); **56**: 12 (for bait preservation); **84**: 51 (directions for preparing & using brines); **94**: 3 (brine freezing & salt penetration); **99**: 23 (for mould inhibition)

CHO 20 (in lobster canning)

SS 1410 (freshwater fish)

Bristol Bay, Alaska (*see also* International North Pacific Fisheries Commission)

S 860: 177 (oceanographic review)

British Columbia (*see also* Limnology; Oceanography, Pacific (NE coastal waters); *also* individual localities, lakes and rivers; Vancouver Island; and other cognate subjects, particularly names of commercial Pacific fishes)

C 1906–10: 103 (ascidians), 187 (decapod crustaceans); **1914–15**: 1 (halibut fisheries investigation), 25, 169 (kelp); **1917–18**: 5 (sea lions); **1**: 95 (hydroids); **2**: 469 (Cirripedia), 503 (kelps), 507 (Rhizopoda & Heliozoa), 519 (Desmidieae); **4**: 9 (wood borers); **6**: 79 (pandalids), 391 (trout); **7**: 213 (Protozoa), 221 (Cestoda), 245 (pilchard feed), 319 (blennies); **8**: 103 (furunculosis), 237 (Hippolytidae larvae)

J 1: 469 (barnacles); **8**: 374 (bottom fishes); **9**: 141 (smooth lumpsucker), 143 (tubesnout poacher); **10**: 320 (humpback whales); **11**: 267, 319, **12**: 97, 121 (marine mammals parasites; corrections on **16**: 385); **11**: 326, 454, **13**: 541 (Polychaeta); **11**: 335 (flag rockfish), 673, **12**: 571 (fish parasites); **12**: 85, **13**: 357 (commercial fishes catches); **12**: 143 (folliculinids), 593 (Chaetognatha); **13**: 515 (lakes productivity), 759 (northern freshwater fishes); **14**: 651 (distribution of freshwater fishes re possible water diversions); **15**: 5 (sea lions), 625 (air & sea temperatures); **16**: 383 (records of rare marine fishes); **19**: 401 (king crab & related species)

B 12, 29, 49 (halibut); **14, 15, 16, 26, 27, 31, 40, 41, 50, 53, 65, 66, 74, 86, 90, 96, 101, 106, 113, 114, 136, 142** (salmons); **17, 47, 63, 67, 104, 143** (herring); **30, 62, 91** (crabs); **32, 84** (game fishes); **34** (oysters); **35, 36, 38, 39, 46** (pilchard); **37, 59, 89** (marine animal oils); **42, 56** (lakes productivity); **54** (lingcod); **64** (smelts); **68, 68R** (descriptions of marine fishes); **80** (wood borers); **93, 145** (seals); **127** (marine plant resources); **139** (Strait of Georgia trawl fishery)

PF 1a, b, c, d, e, f, g (Protozoa); **9b(1), b(2)** (Annelida); **10e** (Arthropoda)

PRP (all entries deal with B.C. topics and are listed under subjects)

S 6 (*Sagitta*); **19** (wood borers); **28, 76** (Protozoa); **64** (decapod Crustacea); **72, 238** (clams); **76, 88** (ciliates); **98** (zooplankton); **126** (Pycnogonida); **133** (crabs); **144** (freshwater fishes); **169** (Anomura); **212, 227** (waterfowl); **290**

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(collection of fishes); **334** (recreational facilities); **348** (whales); **452, 453** (marine resources potential); **851** (past performance & future prospects of fisheries)

SS 452 (marine flora & fauna checklist); **603, 830, 909, 1073, 1108, 1200** (fisheries); **672, 844, 984, 1208** (freshwater fishes); **970** (trawl fishery); **999** (troll fishery); **1103** (shrimp fishery); **1262** (intertidal bivalves)

Brittle stars (*see* Starfish, brittlestar)

Britton, Sydney William

C 1: 413 (fishes body temperature)

SS 261 (extreme temperatures effect on fishes)

Broadhead, George Clifford

PRP 82: 17 (sockeye egg counts)

Brockerhoff, Hans

J 21: 101 (polyphosphate treatment of frozen cod), 747 (marine fatty acids origin), 1379 (plankton lipids fatty acids)

S 794 (alkali hydrolysis breakdown of phospholipids); **805** (marine lipids fatty acid distribution); **819** (marine animals depot fats structure); **864** (fatty-acid pattern retention after triglyceride ingestion)

Brocklesby, Horace Nicholas

C 6: 365, **7:** 413, 521, **8:** 321 (pilchard oil processing); **7:** 505 (salmon body oil hydrolysis)

J 1: 487, **2:** 13, **4:** 59 (pilchard oil composition & films); **4:** 174 (vitamin A adsorption)

B 37, 59 (marine animal oils technology); **46** (feeding oils from pilchards & other fishes)

PRP 3: 3 (oil changes in frozen fish); **9:** 15 (fish oils as food); **11:** 5 (decolorizing fish oils); **12:** 3, **22:** 8, **33:** 7, **36:** 7, 14, **50:** 4 (fish liver oils re vitamin A utilization); **15:** 5, **18:** 5 (salmon body oil hydrolysis); **25:** 13 (pilchard oil utilizations); **28:** 6 (fish oil acids for rubber processing); **30:** 19 (pilchard oil composition); **33:** 13, 17 (halibut muscle biochemistry); **36:** 7 (halibut liver & intestine preservation); **50:** 12 (vitamin A fluorescent analysis)

CVI 1 (pilchard oil for varnish); **6** (fish oils vitamin A)

S 55, 86 (dogfish liver oil vitamins); **87** (pilchard oil commercial possibilities); **97** (pilchard oil vitamin D); **150, 151** (fatty acid & ester molecular weights); **152** (iodine value determination)

SS 362 (dogfish liver oil vitamin D); **475** (B.C. fish oils research); **530** (vitamin oils clinical tests); **603** (B.C. fishing industry); **604** (pilchard oil composition); **653** (hypoglycaemic extract from devil's club root); **694** (utilization of marine animal oils); **726** (vitamin oil studies)

J 21: 409 (obituary of)

Brody–Bertanaffy growth curve

B 119 (method of fitting)

Bromine compounds

B 127: 19, 31 (from seaweeds)

S 487 (bacteria requirements or tolerance)

SS 625 (biochemistry re fish & seaweeds)

Brosme brosme (*see* Cusk)

Brosmius (*see* Cusk)

Brosmophycis marginatus (*see* Brotula, red)

Brotula, red (*Brosmophycis marginatus*)

B 68: 200, **68R:** 393 (full description)

Broughton Strait, B.C.

PRP 106: 24 (young salmon movement)

Brown shark (*see* Shark, brown cat)

Browning (of flesh; Maillard reaction)

J 7: 608, **8:** 74 (in fish products)

PRP 74: 17, 19, **92:** 23, **98:** 3 (cause & avoidance)

S 351 (role of ribose in); **360** (in flesh foods); **400** (enzymatic liberation of pentoses); **772** (bacterial oxidation of glucose & ribose)

SS 924 (antioxidant against, for fruit flesh)

Brownlee, Wesley James

CFI 11 (shucking scallops); **17** (clam-shucking plants)

Bruising

PRA 59: 3 (cause, in plaice flesh before filleting)

Brumwell, Charles Alexander
PRP 96: 16 (rumen cellulose digestion stimulation by fish products), 20 (unusual odour in Pac. cod), 25 (aureomycin as preservative); **101**: 17 (Na & K of tuna canned without salt)
S 377 (rumen cellulose digestion stimulation)

Bryozoa
C 1902–05: 75 (N.S. marine Polyzoa); **1911–14(II)**: 195 (Georgian Bay, Ont.); **1917–18**: 240 (Canadian Polyzoa); **1**: 143, **3**: 47 (B.C. Polyzoa); **3**: 247 (*Membranipora* development); **7**: 361 (Hudson Bay & Strait)
S 587 (Minas Basin, N.S.); **623** (arctic)

Bubbles (*see* Guiding)

Buccinum (*see* Whelks)

Buffalo, bigmouth (*Ictiobus cyprinellus*) (mullet)
J 20: 1397 (life history; ecology)
PRP 75: 35 (smoking of)
CNG 64: 68 (productive capacity)

Buffer species
J 8: 103 (in sockeye fry survival)

Bulb-fish (*see* Dreamer)

Bull, H. O.
SS 1207 (cod reproductive aggressive behaviour)

Bullhead (*see* Irish lord; Sculpin, Pacific staghorn; Sculpin, prickly (freshwater); *also* following headings)

Bullhead, black (*Ictalurus melas*) (*Ameiurus melas*; black catfish)
J 10: 196 (upper temperature limit); **11**: 700 (parasites, B.C.); **12**: 921 (exercise effect on blood); **14**: 654 (B.C. distribution)
S 481 (Man.)
SS 1208: 133 (full description, B.C.)

Bullhead, brown (*Ictalurus nebulosus*) (*Ameiurus nebulosus*; brown catfish)
C 1911–14(II): 14 (Lake Huron)
J 7: 94 (thiaminase in muscle & viscera); **10**: 62 (fasting effect on intestinal flora); **11**: 699 (parasites, B.C.); **14**: 655 (B.C. distribution); **16**: 147 (association in Ont. streams), 175 (respiration), 818 (Miramichi R., N.B.)
B 17: 19 (Langerhans islets tissue)
PRA 20: 3 (lack of trimethylamine oxide), 6 (N.S. lakes populations)
CNG 64: 67 (productive capacity)
S 137, 213: 405 (Lake Jesse, N.S., population); **144**: 69 (B.C. distribution); **206** (in 3 N.S. lakes); **357** (Lake Winnipeg region); **445** (lethal temperature limits); **481** (Man.); **663, 698** (branchial irrigation mechanism)
SS 1208 (full description, B.C.)

Bullhead, common (*see* Bullhead, brown)

Bullhead, prickly (*see* Sculpin, prickly)

Bullhead, yellow (*Ictalurus natalis*)
J 16: 147 (association in Ont. streams)

Bullheads
B 94: 21 (arctic & subarctic distribution)

Bumpus, Dean Franklin
J 14: 931 (transponding drift buoys); **17**: 181 (Bay of Fundy surface circulation)

Buoys, drift (*see* Drift, determination of)

Burbot (*Lota lota*) (ling, maria)
C 1911–14(II): 50 (Lake Huron); **8**: 42 (Hudson Bay)
J 8: 207 (Great Slave L.); **9**: 109 (Ungava Bay); **11**: 701 (parasites, B.C.); **12**: 499 (Skeena R. system lakes), 930, **16**: 137 (Lake Winnipeg); **13**: 773, **14**: 656 (B.C. distribution); **15**: 214 (Heming L., Man.); **16**: 147 (association in Ont. streams); **18**: 47 (preparing otoliths for storage); **19**: 989 (furunculosis); **20**: 417 (biology & taxonomy)
B 55: 41 (B.C. feed study); **56**: 38 (Okanagan L., B.C.); **72**: 41 (Great Bear L., N.W.T.); **94**: 23 (Canadian Arctic & Subarctic); **107** (Great Slave L.)
PRP 70: 10, **72**: 28, **74**: 6, **78**: 6 (re salmon in Skeena R. lakes); **75**: 35 (smoked)

CCG 3: 21 (record size, Great Slave L.); **5**: 1 (fillets & liver proximate composition)
CNG 64: 69 (productive capacity)
CVI 9, 12, 13 (constituents; proximate analysis; vitamin A)
S 101 (muscle heat capacity); **144**: 70 (B.C. distribution); **481** (Man.)
SS 26 (eggs); **117, 119** (James Bay region); **361** (marketing); **1208**: 141 (full description, B.C.)

Burgher, Robert Douglas
J 19: 1081 (cod oil free fatty acids); **20**: 89 (air blowing cod liver oil), 245 (bottlenose whale oil), 591 (capelin oil fatty acids); **21**: 319, 367, 469 (cod flesh, roe & liver oil fatty acids)
S 697 (determining alcohol non-alcohol impurities); **782, 803** (gas–liquid chromatography apparatus fouling); **799, 811, 838** (gas–liquid chromatography of fatty acids); **810, 839** (seal blubber oil fatty acids); **840** (gray-seal milk fatty acids); **845** (ethanol as methyl ester hydrogenation solvent)

Burrard Inlet, B.C. (*see also* Indian Arm, B.C.)
S 123 (oceanography)

Burrfish, striped (*Chilomycterus schoepfi*) (porcupine fish; swellfish)
B 155: 416 (full description)

Bursa, Adam Stanislaw
J 18: 51 (Hudson Bay phytoplankton), 563 (Foxe Basin phytoplankton)
S 549, 550, 798 (dinoflagellates structure, taxonomy, morphogenetic factors); **802** (Canadian Arctic phytoplankton successions)
SS 1359 (Alaskan coastal phytoplankton)

Burwash, Edward Moore
C 1906–10: 295 (Departure Bay, B.C., geology)

Burwash, Frances Mary
C 4: (fishes thyroid iodine content)

Bute Inlet, B.C. (*see also* Inlet and fiord oceanography)
J 13: 273 (river-diluted seawater ionic ratios); **14**: 487, 605 (physical oceanography); **18**: 907 (oceanography re "wax" floating on surface)
PRP 86: 17 ("wax"); **100**: 8 (salinity & temperature)
S 112 (oceanographic observations)
SS 1173 ("wax")

Butler, Terrance Henry
J 16: 761 (B.C. sand crab); **17**: 641 (crabs maturation & breeding); **18**: 873 (crab growth), 1167 (smoothtongue taxonomy); **19**: 401 (king crab in B.C.); **21**: 419 (shrimps records), 971 (parasitic isopod *Holophryxus alaskensis* redescription), 1403 (B.C. Pandalidae)
PRP 83: 30, **94**: 30 (B.C. commercial shrimps); **89**: 84, **109**: 16 (crab tagging); **94**: 16 (collapsible crab trap); **99**: 3 (B.C. crab feed); **101**: 3 (shrimps & prawns prospecting); **107**: 22 (commercial crab larvae distribution, abundance)
CNG 28, 31, 35, 39, 55 (shrimp prospecting, 1953–59); **67** (improved prawn trap)
S 387 (prawn nematode infection); **485** (Dungeness crab abnormal appendages); **635** (B.C. decapod Crustacea records)
SS 905 (English Bay shrimps); **957, 1103** (Pac. commercial shrimps); **983** (Dungeness crab biology); **1065** (parasitic cirripede rediscovery); **1106** (first B.C. crangonid shrimp record)

Butterfish (*Poronotus triacanthus*) (dollarfish; harvest-fish; shiner) (*see also* Gunnel, rock)
C 1902–05: 85 (Canso, N.S.)
J 16: 824, **17**: 732 (off N.B.)
B 155: 332 (full description)
S 41: 31 (bacteria of); **184** (Gulf of St. Lawrence); **226, 587** (in N.S. waters); **234** (P.E.I. waters)
SS 656 (P.E.I.)

Butterflyfish, spotfin (*Chaetodon ocellatus*)
B 155: 265 (full description)

Butters, John
CPO 1960-23, -29, 1961-5 (B.C. offshore oceanography)

Buttkus, Hans
J 20: 45 (fish muscle rigor), 181 (measuring fish muscle texture)
S 725 (muscle changes during cold storage)

By-products, fishery (*see also* Fertilizer; Glue; Meals, fish; Solubles, condensed; Wastes recovery; *also* other cognate headings)
B 37, 59, 89 (marine animal oils technology; *see* their indexes)
PRP 71: 5 (review)
CHN 19 (selected list of Board publications on)
CVI 11 (essential amino acids of); **16** (from salmon viscera)
NSB 5 (from dogfish)
S 299 (possible developments); **332** (handling)
SS 686 (vitamins); **1404** (Ceylon)

C

Cabelling
B 134: 45 (on mixing of seawater masses)

Cabezon (*Scorpaenichthys marmoratus*) (Sculpin, marbled) (*see also* Sculpin, staghorn)
C 1: 285 (feed; spawning)
B 68: 242, **68R:** 282 (full description)
PRP 58: 13 (liver oil vitamin A)
S 81 (creatine in); **82** (arginase in); **290** (Queen Charlotte Is.)

Cabinet, refrigerated
PRP 89: 76, **93:** 25 (for display in stores, etc.)

Cabot Strait (*see* Laurentian Channel)

Caddis fly
SS 504 (predation on pink salmon)

Caeca, pyloric (*see also* Enzymes; Vitamin A; Vitamin D)
J 3: 473 (characteristics, cod & haddock); **6:** 392 (counts in pink salmon); **20:** 849 (of blue whiting)
B 136: 165 (counts for distinguishing Pac. salmon stocks)
PRA 18: 11, **21:** 9 (enzymes for leather bating)
PRP 69: 66 (enzymes for solubilizing flesh); **71:** 5, **75:** 52 (enzymes for leather bating); **75:** 43 (enzymes for peptone production), 48 (whitefish: vitamin A in oil); **80:** 52 (growth factor for trout feed)

Caesium compounds
J 19: 149 (radioactive nitrate as fish marker)
CCG 6: 13 (radioactive, for marking lampreys)

Cake, press (*see* Meals; Reduction)

Cakes, fish (*see also* Delicatessen products)
PRP 86: 16 (canned fried salmon)
CCG 4: 10 (from freshwater fishes)
CFI 15 (canning)
SS 1292, 1345 (from freshwater fishes)

Calanus*; *Pseudocalanus (*see also* Copepoda; Entomostraca)
C 1917–18: 217 (bacterial destruction of); **2:** 98 (high temperature resistance); **3:** 179, 331 (Belle Isle Strait); **5:** 83 (light effect on heart rate)
J 1: 1 (*C. tonsus* life history); **12:** 858 (Ungava Bay); **16:** 473 (Igloolik area, N.W.T.); **17:** 434 (Quoddy region, N.B.); **20:** 685 (temperature effect on growth)
S 3 (Passamaquoddy Bay); **79** (ultraviolet light effect on); **808** (as E Canadian waters indicators)
SS 164 (exuviation & variation); **182** (Gulf of St. Lawrence); **476** (*C. tonsus* as economic factor); **587, 589** (biology, Bay of Fundy)

"Calanus" series (of papers) (re Canadian Arctic and Subarctic; 24 items, as numbered)
J 9: 65, **11:** 98, **13:** 41, **16:** 403 (No. 1, 4, 10, 19: Expeditions station lists; correction on **16:** 930); **9:** 83, **10:** 326 (2, 3: fishes); **11:** 507 (5: polychaetous annelids); **11:** 709 (6: amphipod crustaceans); **12:** 762 (7: cirripede crustaceans); **12:** 858, **18:** 63 (8, 21: copepods); **12:** 899 (9: echinoderms); **15:** 155, **16:** 453 (15, 20: oceanography); **15:** 219 (13: bearded seal growth & reproduction); **18:** 51, 563 (18, 17: phytoplankton); **19:** 377 (22: zooplankton); **19:** 677 (23: decapod crustaceans)

B 118 (12: ringed seal biology)
S 469 (review, 1947–55); **482** (11: decapod crustaceans); **502** (14: *Themisto* amphipod as production determinant); **545** (16: edible mussels); **762** (24: *Sagitta* life cycle re environment)
SS 868, 881, 937, 982, 1062 (non-numbered general reports)

Calcium compounds (*see also* Composition, chemical; Limnology; Oceanography; Sea water; *also* cognate headings, e.g. Bone)
J 12: 642 (fish & mammalian liver); **13:** 273 (river-diluted fiord waters ionic ratios); **16:** 7 (Atl. coastal seawater); **21:** 1475 ($CaCO_3$ saturation in Labrador Sea)
PRP 41: 17 (in canned salmon, re rickets); **53:** 9, **57:** 11 (in various fishery products)
S 487 (bacteria requirements for)

Calder, (Captain) Arthur Ellsworth
J 15: 1133 (tribute to)

California
J 15: 47 (lampreys)
SS 529, 725 (polychaetes)

Calipera (Ciliata)
S 563 (new species: *brevipes*)

Callianassa californensis (*see* Shrimp, ghost)

Callichrous bimaculatus (an Indian fish)
J 16: 1 (preservation with antibiotic)

Callorhinus alascanus (*see* Seal, northern fur)

Callorhinus ursinus (*see* Seal, northern fur)

Calorific value (*see* Composition; Nutritive value)

Cambodia
J 18: 147 (artificial drying of fish)

Cameron, Alexander Thomas
C 1911–14(I): 51, **1914–15:** 169 (iodine in B.C. marine flora & fauna); **1914–15:** 25 (B.C. kelp beds commercial value), 33 (B.C. oceanography); **I:** 39 (B.C. oceanographic biology), 73 (Cl, Br & I in Strait of Georgia waters)
J 6: 204 (obituary of J. Dybhavn)
B 72 introduction (NW Canada fisheries survey)
PRP 31: 5 (resignation of C. McC. Mottley); **35:** 23 (resignations from Nanaimo Station)
S 8 (light effects on narcotized animals)
SS 85, 107, 108 (iodine distribution in plant & animal tissues); **109** (dogfish enlarged thyroid)
J 7: 216 (obituary of)
PRA 41: 3 (obituary of)
PRP 73: 3 (obituary of)

Cameron, Frances Ella
J 14: 165 (N B.C. copepods distribution)

Cameron, William Maxwell
PRP 43: 14 (Lakelse L. sockeye run); **45:** 23 (Pac. salmon natural fertilization efficiency); **49:** 17 (B.C. stranded killer whale); **76:** 72 (Skeena R. sea dilution)

Campbell, A. G.
SS 746 (hibernated oysters coliform bacteria content)

Campbell, James
J 1: 179 (muscle nitrogenous constituents)
PRA 10: 9 (fish flesh digestibility)

Campbell, Mildred Helena
J 1: 1 (copepod development)
S 80 (Strait of Georgia quantitative plankton)
SS 335, 363 (free-swimming copepods, Vancouver Is. region); **476** (Strait of Georgia *Calanus tonsus* economy)

Campbell, Neil John
J 15: 1175, **21:** 45 (Foxe Basin ice discoloration & cold saline water)
PRA 69: 18 (E Arctic oceanography); **72:** 33 (IGY oceanography; correction on **J 17:** 944)
SS 1285 (N Atl. deep water circulation)

Campostoma anomalum (*see* Stoneroller)

Canadian Committee for Freshwater Research (A number of publications relating to investigations conducted through this Board-sponsored Committee are indexed herein under their authorship and subject matter, without specific reference to the Committee)

Canadian Committee on Oceanography
B 134: 20, 101 (organization & functions)
SS 1319 (background & organization); **1320** (opening of Bedford Institute of Oceanography)

Canadian Fisheries Expedition, 1914–15 (Gulf of St. Lawrence and E subarctic waters)
C 1918–20: 85 (Tomopteridae distribution), 93 (floating tunicates distribution)
SS 177 (Preface); **178** (Introduction); **179** (fish eggs & larvae); **180** (herring age & growth); **181** (young herring growth); **182** (copepods); **183** (hydrodynamics of waters); **184** (hydrographic observations); **185** (quantitative & qualitative plankton studies); **186** (quantitative phytoplankton & pelagic protozoa)

Canagaratnam, Pascarapathy
J 16: 121 (fish growth in different salinities)
SS 1107 (Ceylon beach seine fishery)

Cancer (*see* following species, *also* Crab; Crabs)

Cancer amoenus
C 1: 335 (larval stages)

Cancer antennarius (a California crab)
S 823 (deoxyribonucleic acid)

Cancer borealis*
CNG 64: 28 (productive capacity)
AF 10m: 33 (description)
S 5 (Bay of Fundy)

Cancer gracilis
S 823 (deoxyribonucleic acid)

Cancer irroratus*
CNG 64: 28 (productive capacity)
AF 10m: 32 (description)
S 5 (Bay of Fundy)

Cancer magister (*see* Crab, Dungeness)

Cancer productus
S 823 (deoxyribonucleic acid)

Candlefish (*see* Eulachon)

Candling of fillets (for parasites)
J 15: 537, **18**: 137 (slicing & illuminating conditions)
CFI 5 (for nematode removal)
CHN 6 (mechanically preparing cod fillets for)

Cannibalism (*see also* Feed studies)
SS 176 (young sockeye on dead adults)

Canning; Canned products (*see also* Cans; Headspace; Inspection of fishery products; Vacuum)
C 1917–18: 181, **1918–20**: 103 (sardines); **1918–20**: 125 (dogfish); **1921**: 1 (clams); **2**: 1, **5**: 93 (lobsters); **6**: 377 (haddock)
J 2: 431, 439, 463, 469, 473, **4**: 162, **6**: 309 (salmon); **2**: 457, 469, **4**: 55 (pilchard); **3**: 100 (cod & tuna); **3**: 100, **7**: 65 (mackerel); **3**: 100, **6**: 183, **14**: 637 (lobster); **5**: 344 (crabs, shrimp & clams); **6**: 309 (lingcod); **7**: 65 (sardines), 116 (herring)
B 6, 8, 43 (lobster); **24** (mackerel); **36**: 21 (pilchard); **47**: 22 (herring); **59**: 425 (changes in oils); **89**: 273 (oils used); **90**: 7 (salmon); **91**: 10 (crab)
PRA 1: 6 (brine-frozen mackerel); **5**: 9 (tuna); **9**: 3 (vacuum function); 7 (storage temperature for); **12**: 7 (scallop); **13**: 5 (grading lobster canneries); **14**: 8 (mackerel fillets); **15**: 12 (sterilizing temperature function); **19**: 11, **25**: 5, **27**: 17 (chicken haddies: yield); **21**: 4 ("wet pack" lobster); **23**: 8 (clam: shrinkage during canning); **25**: 9, **28**: 8 (eels in jelly); **27**: 7 (cod livers); **31**: 8 ("Iceland pack" for cod, haddock, hake); **33**: 10 (warning about swells, "flippers" and undercooking)
PRC 1: 28 (Lake Erie smelt); **2**: 37 (various Lake Erie fishes)
PRP 11: 22, **13**: 13, **16**: 3; **18**: 5, **19**: 14, **21**: 10, **23**: 22, **28**: 14, **29**: 12, **30**: 11, **32**: 4, **33**: 20, **40**: 14, **41**: 3, 17, **42**: 10, **55**: 12, **63**: 27, **76**: 71, **86**: 16, **100**: 15, **101**: 17, **102**: 15, 22, **104**: 9 (Pac. salmons: processing, nutritive values, inspection, curd, crystals, etc.); **19**: 14, **40**: 6,

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*CSG 50, issued in 1966, gives the common names Jonah crab and rock crab for *Cancer borealis* and *C. irroratus*, respectively.

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

81: 83 (oysters); **19**: 20, **53**: 9 (nutritive values of various); **22**: 15 (salmon eggs); **45**: 4 (halibut cheeks in jelly); **45**: 18 (abalone); **46**: 3 (sablefish); **52**: 3, 7, 19, 24, **72**: 33 (herring); **52**: 7, **79**: 43 (pressure cooling); **53**: 14 (razor clam); **63**: 38 (pastes; correction on **65**: 66); **63**: 41, **77**: 108 (anchovies); **65**: 72 (continuous heat processing); **73**: 58, **76**: 71 (waste recovery); **74**: 17, **92**: 23, **98**: 3 (flesh browning, & avoidance); **74**: 19 (freshwater fishes); **79**: 44 (infra-red preheating); **87**: 34 (crab); **89**: 82 (shrimp); **91**: 10 (vacuum preheating to reduce moisture content); **101**: 17 (salmon; tuna); **110**: 13 (dogfish)

CCG 3: 7 (lamprey); **4**: 10 (freshwater fish specialty products)

CFI 2 (product sampling); **3, 9** (vacuum function); **4** (shad); **5** (nematode removal before canning); **6** (kippered snacks); **8** (home-made equipment); **10** (tuna); **12** (fish chowder); **13** (sardines); **14** (mackerel fillets); **15** (fish cakes); **16** (herring & sardines; use of tomato sauce); **18** (swordfish); **19** (lobster: comprehensive); **21** (lobster paste); **22** (plant sanitation); **23** (mussels); **24** (clams); **25** (oysters); **26** (herring & alewives)

CHO 1, 2, 4 to **24** inclusive, **33** (lobster & lobster products; *see under* Lobster (products) for details); **12, 16** (cannery sanitation); **16, 31** (cannery planning & equipment); **27** (herring & alewives; use of tomato sauce); **28** (mackerel steaks); **30** (chicken haddie); **32** (mussels & clams)

CHN 14 (botulism from improper processing)

CVI 3 (shellfishes: proximate analysis); **15** (effects on nutritive values); **17** (B vitamins & amino acids in various canned fish & shellfish)

MSP 4 (crystals in canned fish); **5** ("curd" in canned salmon)

NRB 11: 19 (lobster)

NRS 2: 6, **15**: 30 (lobster); **13** (methods)

S 162 (salmon); **455** (frozen vs. unfrozen sardines); **504** (predicting sockeye colour retention after canning); **672** (recent advances: review); **742** (problems)

SS 160, 206 (swelled canned sardines bacteriology); **249** (blackening of lobster); **258** (grading lobster canneries); **270, 534, 548, 709** (lobster); **281** (bacteria effects); **531** (vacuum function); **724** (nutritive value of salmon); **755** (freezing & thawing effect on herring); **1175** (white suckers); **1292, 1410** (freshwater fish)

Cans (for canning fishery products) (*see also* Canning)

CHO 14 (for lobster); **22** (embossing lids); **27, 28** enamelled vs. plain, for sea foods)

CHN 2 (for frozen lobster meat)

CFI 1 (enamelled vs. plain, for sea foods)

Canso, Strait of (and vicinity) (*see also* Oceanography, Atlantic NW coastal waters)

C 1902–05: 55 (Diatomacae), 59 (flora), 71 (seaweeds), 75 (Polyzoa), 81 (fishes)

J 11: 409 (bottom temperature, Canso Bank)

PRA 59: 7 (water conditions before causeway completion); **67**: 6 (cod tagging results)

Cape . . . . (*see* name of cape)

Capelin (Atlantic) (*Mallotus villosus*) (caplin)

C 8: 20 (Hudson Bay)

J 7: 200 (artificial drying); **9**: 103 (Ungava Bay); **11**: 251 (Belle Isle Strait); **15**: 275, 295 (off Nfld.), 1383 (as cod feed); **16**: 815 (Miramichi R., N.B.); **17**: 731 (new occurrences off N.S.); **20**: 591 (oil analysis)

B 109: 34, **141**: 33 (longlining bait); **155**: 117 (full description)

PRA 38: 6 (artificial drying); **59**: 6 (proximate composition)

CSG 15 (description)

CNG 64: 27 (productive capacity)

NRB 2 (economic biology); **17** (life history)

S 379A (climatic changes effect on range)

SS 111, 117 (Hudson & James bays region); **813** (microsporidian parasite)

Capelin (Pacific) (*Mallotus villosus*) (*M. catervarius*)

J 3: 417 (sexual dimorphism in vertebral number)

B 64: 20 (B.C. life history, fishery, uses, etc.); **68**: 97, **68R**: 127 (full description)

CNG 64: 49 (productive capacity)

S 851: 55 (B.C. fishery)

SS 127 (scale development)

Capilano River, B.C.
J 17: 739 (steelhead trout stocks)

Caplin (*see* Capelin (Atlantic))

Caranx crysos (*see* Runner, blue)

Caranx hippos (*see* Jack, crevalle)

Carapace (*see* Chitin; Crab; Crustacea; Decapoda; Lobster; Shrimp)

Carassius auratus (*see* Goldfish)

Carbohydrates and crude fibre (*see also* Acids, nucleic; Browning; Cellulose; Chitin; Glucosamine; Glycogen; Kelps; Nucleotides; Ruminant; Seaweed products; Sugars)
C 2: 503 (in Pac. kelps)
J 14: 38 (in soils, freshwater & marine sediments & seston, fresh and marine waters); **18:** 1001 (in marine phytoplankters)
B 125: 133 (determination in marine plankton; revised edition in 1965); **127:** 33 (from kelp & seaweeds)
S 14 (in Polychaeta); **682, 816, 858** (re primary production in sea)

Carbon (*see also* Biosynthesis traced by radioactive isotopes)
J 18: 1001 (ratio to other elements in marine plankters)
B 125: 117, 153 (determination in marine plankton; revised edition in 1965)
S 682 (metabolism of phytoplankton); **753** (compounds synthesized by marine heterotrophic processes)

Carbon dioxide (*see also* Carbonates; "Dry Ice")
J 6: 435 (in herring egg development); **7:** 238 (rancidity inhibitor); **14:** 298 (re phytoplankton respiration); **15:** 573 (in blood of exercised fish), 797 (effect on salmon eggs); **16:** 175 (effect on fish respiration)
B 125: 29, 181 (determination in seawater; revised edition in 1965)
PRA 56: 17 (preservative during salt fish processing)
PRP 62: 7 (sole flesh freshness test); **66:** 17 (antioxidant for frozen fish)

Carbonates (*see also* Carbon dioxide)
J 12: 543 (re fish crops; **14:** 298 (re phytoplankton respiration); **16:** 391 (changes in exercised trout)
B 125: 29, 180 (determination in seawater; revised edition in 1965)

Carbonyl enediols
J 7: 522 (antioxidant effect)
SS 924 (retarding fruit flesh browning)

Carcharhinus longimanus (*see* Shark, whitetip)

Carcharhinus obscurus (*see* Shark, dusky)

Carcharias taurus (*see* Shark, sand)

Carcharodon carcharias (*see* Shark, white)

Carcinides maenas (*see* Crab, green)

Cardin, Aimé
J 7: 471, **8:** 189 (seal oil purification); **15:** 555 (salt cod phospholipid fatty acids); **18:** 851 (salt cod chemistry)
PRA 66: 16 (fat changes in fish salting)
SS 1235 (salt cod volatile substances)

Cardinalfish, Sherborn's (*Rhectogramma sherborni*)
J 19: 307 (NE Pac. distribution)
B 155: 242 (description of Atl.)

Cardium corbis (*see* Cockle)

Cards, drift (*see* Drift, determination of)

Careproctus gilberti (*see* Snailfish, smalldisk)

Careproctus longipinnis (*see* Snailfish, longfin)

Careproctus melanurus (*see* Snailfish, blacktail)

Careproctus ovigerum (*see* Snailfish, abyssal)

Careproctus reinhardi (*see* Sea tadpole)

Caridea (*see* Shrimps, Pacific)

Caristius macropus (*see* Manefish)

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Carl, George Clifford
J 3: 20 (sucker feed); **9**: 417 (Cowichan L. limnobiology)

PRP 24: 21 (artificially fertilizing natural waters); **36**: 12 (Cowichan R. brown trout spawning run); **39**: 9 (Cowichan Bay salmon angling)
S 170, 228 (brackish water flora & fauna; ecology); **231** (coho salmon egg incubation)
SS 635 (measuring volume of a fish); **636** (Cowichan R. fishes); **637** (B.C. amphibians); **638** (fish conservation); **670** (furunculosis, ichthyophthiriosis); **695** (hatchery closed-water system); **696** (B.C. Cladocera & Copepoda distribution); **697** (marked fish); **716** (Vancouver Is. brown trout); **727** (broken salmon eggs); **795** (some B.C. marine fish records); **844, 984, 1208** (B.C. freshwater fishes); **1200** (B.C. commercial fisheries)

Carlander, Kenneth Dixon
J 12: 543 (lakes fish standing crop)

Carotenoids (*see also* Hydrocarbons; Pigments)
J 14: 54 (in algae, waters, sewage, sediments, etc.); **18**: 1001, 1007 (in marine phytoplankters)
B 59: 76, **89**: 78, 281 (in marine animal oils); **122**: 28 (of phytoplankton)
S 816 (in primary production)

Carp (*Cyprinus carpio*)
J 10: 196 (upper lethal temperature); **11**: 690 (parasites); **12**: 920 (exercise effect on blood); **14**: 655 (B.C. distribution); **15**: 607 (preferred temperature); **16**: 147 (association in Ont. streams), 175 (respiration), 515 (seasonal occurrence in Volga delta); **21**: 613 (avoidance of nets)
B 7: 19 (Langerhans islet tissue); **56**: 33 (Okanagan L., B.C.)
CCG 4: 10 (sausage, smoked); **5**: 1 (fillet proximate composition)
CNG 64: 68 (productive capacity)
S 144: 67 (B.C. distribution); **448, 481** (Man., & northern limit), **663** (branchial irrigation mechanism)
SS 737 (muscle autolysis); **945** (an abnormal); **1128** (temperature preference): **1208** (full description, B.C.)

Carpoides cyprinus (*see* Quillback)

Carpsucker, Quillback (*see* Quillback)

Carrageen (*see* Irish moss; Seaweed products)

Carrothers, Percival John Godber
PRP 103: 6, **106**: 20 (Kuralon net twine tests)
CNG 51 (Nylon gillnet twines comparisons); **54** (monofilament nylon web); **66** (polypropylene fibre tests re gill nets)
SS 1181 (fishing gear problems); **1209, 1387, 1394** (nets & twines physical properties)

Carson, William Victor
CSG 38, 42 (NW Miramichi R. chemical conditions)

Carter, Arthur William
PRC 1: 15 (lamprey barrier operation & maintenance, Lake Superior)

Carter, Neal Marshall
J 2: 439 (cannel salmon nutritive values); **6**: 63 (nitrite effect on cats, rats); **15** (5): (i), (6): (i) (Foreword to issues); **21**: 409 (obituary of H. N. Brocklesby
B 59 in part, **89** Preface (marine animal oils technology); **110** (Board publications titles & index, 1901–54)
PRP 12: 7 (S B.C. fiord oceanography); **13**: 3, **17**: 8 (B.C. herring salting); **16**: 3 (canned salmons nutritive value); **21**: 3 (science re fishing industry); **23**: 7, **24**: 11 (publication lists); **25**: 3 (fishing net preservation); **26**: 19, **99**: 35 (ambergris); **32**: 17, **36**: 16 (measuring fish oils in bulk); **42**: 8 (salmon-egg bait preservation); **55**: 7 (jellyfish stinging), 13 (concentrating clam nectar by freezing), 18 (pearl essence from herring scales); **62**: 21, **76**: 85 (true freezing point of fish flesh); **63**: 27 (home canning of salmon); **71**: 5 (fish wastes uses); **77**: 95 (flesh parasite detection by X-rays), 106 (herring meal scorch & ignition temperatures); **84**: 51 (brines & dips preparation & application); **88**: 57 (freezing B.C. fish at sea)
CNG 47 (titles & index of Board Circulars, 1935–57)
CVI 9 (freshwater fishes analyses); **10** (utilization of whales)
MSP 4 (glass-like crystals in canned fish): **5** (curd in canned salmon); **6** (Vancouver Station 25th anniversary)

S 123 (B.C. fiord oceanography); **172** (chlorinity to salinity conversion chart); **189** (seawater colorimetric analysis techniques); **197** (Shuswap L., B.C., limnology); **305** (nutritional aspects of Canadian Government fisheries work)

SS 423, 871 (sea as Nature's laboratory); **450, 872, 985** (Canadian fisheries technological problems); **451** (vertical extremes in B.C. inlets); **477** (chemical oceanographic data reporting); **531** (vacuum significance in canning); **605** (marine oils); **606** (science re industry); **698, 728** (measuring bulk fish oils & other liquids); **699** (Biblical mentions of aquatic organisms & products); **754** (fishery research re war effort); **793** (liver & viscera products); **906** (B.C. herring products review); **909, 1150** (B.C. fisheries resource-use problems); **934** (packaging studies)

Cartons (*see* Packaging)

Caspian Sea

S 594 (seal palaeontology)

Castell, Charles Howell (Abbreviations used: *Cl.* = *Clostridium*; *Ps.* = *Pseudomonas*; TMA = trimethylamine; TMAO = trimethylamine oxide)

J 6: 491 (TMAO effect on bacterial growth); **7:** 55 (sterilizing seawater), 62 (*Cl.* growth in seaweeds & fish), 70 (*Cl.* survival in cured fish), 162 (*Ps.* differentiation), 370, 378 (bacteria re cod fillet quality), 421, 528, 536, 561, **8:** 195 (flesh TMAO bacterial reduction and its prevention); **7:** 430 (*Ps. putrefaciens* from cod fillets); **8:** 111, **12:** 329, **13:** 21 (care of fish aboard vessel); **9:** 148 (*Flavobacterium* re fish spoilage), 377 (halophile survival in water & brines); **13:** 201 (bacterial reduction of hydroxylamine to nitrite), 207 (nitrite-containing ice & dips for gutted fish), 291 (gill removal effect on spoilage rate), 861 ("bilgy" fish); **14:** 617, 775, **16:** 13, 21 (odours produced by *Ps.* in flesh; correction on **14:** 998); **14:** 771 (antibiotics effect on bacterial enzymic spoilage); **15:** 701, 729 (graded fish & fillet quality); **16:** 221, **18:** 295, 303 (landed quality variations in cod & haddock); **16:** 539 (nitrite content of treated fillets); **17:** 595 (inhibition of bacterially produced TMA); **21:** 813 (irradiated scallops storage), 827 (gamma irradiation of haddock fillets), 1345 (fish muscle rancidity evaluation), 1361 (lean fish muscle rancidity variations), 1371 (bacterial inhibition of rancidity)

B 100 (fish production spoilage problems); **138** (antibiotic preservative dips for fillets)

PRA 36: 14 (fish plant water supply); **39:** 3, **41:** 10, **56:** 5, 10 (filleting sanitation); **40:** 7 (chlorinated water fillet dip), 9, **47:** 10, **52:** 28, **70:** 23 (fish plant sanitation); **44:** 3 (bacterial food "poisoning"), 8, **46:** 3 (chilled fish spoilage rates); **48:** 8, **50:** 9, 13 (salt fish reddening bacteria control); **55:** 14, 17, 24, **59:** 15 (factors causing fish spoilage at sea); **56:** 14 (nitrite dips), 17 (lightly salted fish storage); **58:** 27 ("bilgy" fish); **60:** 9 (haddock fillet quality)

CHN 1 (fish deterioration in boats at sea); **8** (metal-catalyzed rancidity odours); **14** (botulism)

S 532 (fresh fillet packaging); **540** (antibiotic-treated wrapped fillets keepability); **551A** (antibiotics for Atl. fish spoilage control); **565** (seaweedy odour in cod & haddock); **595** (fresh fish handling), **596** (chlorine effect on antibiotics); **744** (metal-induced groundfish rancidity)

SS 808 (metallic silver as water disinfectant); **845** (fish spoilage creates transportation problems); **846** (slime removal re fish spoilage rate); **873 to 879** inclusive (combatting bacterial spoilage); **1015, 1016** (fish handling from sea to package); **1066** (frozen fish quality factors); **1412** (thermophilic bacteria in foods and food ingredients)

Cat

J 6: 63 (re testing for nitrite preservative non-toxicity)

B 75: 21 (susceptibility to clam toxicity)

PRP 52: 23 (re testing canned clams for toxicity)

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Catalyst (*see also* Hydrogenation)
S 456 (cysteine–Fe reduction of trimethylamine oxide)

Catch, equilibrium (*see also* Yield, equilibrium)
B 119 (determination & significance of maximum)

Catch curves (*see also* Survival)
B 119 (for determining survival rate; *see* its index)

Catch limitations (*see* Management; International Commission names)

Catch per unit effort (*see also* Abundance; Catchability; Catches; Census, creel; Effort and intensity of fishing; Yield)
J 5: 43 (re abundance & exploitation); **7**: 177 (lake trout); **10**: 459 (lemon sole); **15**: 1345 (lobster re temperature); **16**: 107, **17**: 625 (Lake Winnipeg whitefish); **16**: 131 (Lake Winnipeg winter fishery); **17**: 677 (Crecy L., N.B., trout); **18**: 1153 (Ont. pond trout)
B 4: 10 (muttonfish); **38**: 6 (pilchard); **43**: 9 (lobster); **67**: 22 (herring); **82**: 2 (coregonine fish); **107** (Great Slave L.); **119** (used in population estimates; *see* its index); **139**: 15 (Strait of Georgia trawl fishery); **143** (B.C. herring)
PRA 34: 7 (smelt); **36**: 6, **38**: 3, **42**: 7, **43**: 3, 9 (trout); **49**: 14 (scallop)
PRP 77: 91 (link relative method for index of)
CAG 1 (seals); **4, 5** (harp seal); **6** (Hudson Bay sea mammals)
CJG 2 (redfish); **3, 4** (redfish by trawling, cod by longlining)
CNG 1, 5 (Pac. herring)
CSG 17 (winter flounder)
CSS 6 (N.S. Banks cod); **7, 8, 9** (Maritimes groundfish, 1953–55)
NRB 6: 9 (lobster)
NSB 15: 36 (lobster)
S 238, 255, 262, 286 (clams); **251** (B.C. trout); **285, 378** (B.C. herring); **296** (re abundance); **318, 321** (P.E.I. speckled trout); **394** (sablefish)
SS 487 (pilchard); **779** (B.C. commercial shellfish); **818** (butter clam)

Catchability (*see also* Abundance; Catch per unit effort; Effort and intensity of fishing)
J 6: 291, **15**: 1345, **20**: 59 (lobsters, re various factors); **10**: 474, **11**: 284 (whitefish); **11**: 827 (lake trout); **20**: 327 (brook trout re pond formation)
B 119 (*see* its index)
PRP 38: 10 (B.C. herring re tide & moon)
CCG 1 (ringed & bearded seals)

Catches (*see also* principally appropriate entries under the names of organisms; *also* Abundance; Census, creel; Landings; Statistics of fisheries and catches; Yield; *also* other cognate headings)
J 12: 85 (as affected by economic factors); **13**: 357 (NE Pac. fishes), 613 (computed from models); **14**: 1 (re lake size); **16**: 807 (Miramichi Bay commercial fishes)
B 107 (Great Slave L. commercial fishery; correction on **J 14**: 997); **109, 141** (in Nfld. longlining experiments); **119** (re populations; *see* its index); **139** (Strait of Georgia trawl fishery)
CNG 64 (Canadian fisheries productive capacity)
S 453, 851 (B.C. commercial fisheries); **812** (effect of regulations on)
SS 885 (B.C. commercial fisheries)

Catfish (*see* Madtom, tadpole; Wolffish, striped)

Catfish, black (*see* Bullhead, black)

Catfish, broad-headed or bull-headed (*see* Wolffish, northern)

Catfish, brown (*see* Bullhead, brown)

Catfish, channel (*Ictalurus punctatus*) (*Ameiurus lacustris*; *I. lacustris*; channel cat)
C 1911–14(II): 14 (Lake Huron)
CCG 4: 10 (sausage delicatessen); **5**: 1 (proximate composition)
CNG 64: 67 (productive capacity)
S 357 (Lake Winnipeg region); **445** (lethal temperature limits); **481** (Man.)

Catfish, freshwater (*see* Bullhead, brown)

Catfish, spotted (*see* Wolffish, spotted)

Catherometer
S 782 (filament fouling during chromatography)

Catostomus catostomus (*see* Sucker, longnose)

Catostomus columbianus (*see* Sucker, bridgelip)

Catostomus commersonii (*see* Sucker, white)

Catostomus macrocheilus (*see* Sucker, largescale)

Catt, James
SS 809 (trout re-stocking)

Cattle feed (*see* Feedstuffs; Ruminant livestock feed)

Caviar
CNG 64: 17 (Man. production from sturgeon, 1959)

Cellulose (*see also* Carbohydrate; Pollution; Ruminant livestock feed)
C 1901: 11, **1902–05**: 37, 111 (sawdust as pollutant)

Census (*see also* Angling; Census, creel; Distribution; Seal; Surveys)
CCG 1: 87, **5** (E Arctic seals)
S 416: 512 (aerial, of harp seals); **767** (E Arctic ringed seal)
SS 902, 929 (aerial, of seals)

Census, creel (*see also* Angling; Trout)
J 8: 383 (N.B. lakes); **11**: 5 (Algonquin Park lakes)
PRA 36: 6, **38**: 3, **42**: 7, **43**: 3, 9 (trout in N.B. & N.S. lakes)
PRP 46: 20 (Cowichan R. steelhead trout); **87**: 39, **92**: 18 (Cultus L. cutthroat trout)
S 385 (Crecy L., N.B.)

Centroscyllium fabricii (*see* Dogfish, black)

Centroscymnus coelolepis (*see* Shark, Portuguese)

Cephalopoda (*see also* Octopus; Squids)
C 1917–18: 248 (Canadian)
J 9: 164 (moisture & vitamin B content)

Ceratias holboelli (*see* Angler, deepsea)

Ceratoscopelus maderensis (*see* Lanternfish, horned)

Ceratoscopelus townsendi (*see* Lanternfish, fangtooth)

Cestoda, parasitic (*see also* Parasites; *Triaenophorus*)
C 1911–14(II): 177 (of black bass); **2**: 453 (of whitefish), 459 (of cunner); **7**: 221 (Pac. coast), 377 (Hudson Bay drainage system); **8**: 77 (Pac. coast *Eubothrium*), 89 (intermediate host)
J 7: 186 (of Great Bear L. trout); **8**: 207 (of Great Slave L. fishes); **11**: 267 (of B.C. sea mammals), 673 (of B.C. freshwater fishes); **12**: 93 (of sockeye smolts); 106 (of B.C. whales), 768 (of inconnu); **13**: 485 (of seals & sea lions), 858 (of arctic char); **14**: 721 (of squid); **15**: 215 (of Heming L. fishes); **18**: 441 (of Lac la Ronge trout); **21**: 549 (of Heming L. spottail shiner)
B 45 (*Diphyllobothrium*); **72**: 39, 79 (in N Canadian lakes)
SS 86 (*Haplobothrium* systematics); **87** (new, from bowfin); **112** (bothriocephalid morphology); **444** (study technique); **469** (of Canadian animals); **518** (viability in artificial media); **631** (*Diphyllobothrium latum* taxonomy)

Cestracion tiburo (*see* Shark, bonnethead)

Cestracion zygaena (*see* Hammerhead, smooth)

Cetacea (*see also* Beluga; Bowhead; Dolphin; Narwhal; Porpoise; Whale)
CNG 32R (key & descriptions, NE Pac. & Arctic)

Cetorhinus maximus (*see* Shark, basking)

Ceylon
S 738 (trawler harbour); **882** (cold storage plant)
SS 1018, 1071 (seaweed resources); **1107** (beach seine fishery); **1109** (*Salvinia* aquatic plant for fish preservation); **1114** (fish salting & drying; **1115, 1131** (trawler catches); **1117** (transporting fish

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in chilled brine); **1160** (Canada re Colombo Plan); **1370** (marine fisheries survey & critique); **1390** (fish processing plant); **1403** (fish preservation); **1404** (fishery by-products); **1405** (dolphins commercial uses); **1406** (trawler fish keeping quality); **1407** (Oru mechanization); **1408** (fishes analyses)

Chaetodon ocellatus (*see* Butterflyfish, spotfin)

Chaetognatha
C 2: 98 (*Sagitta* upper temperature limits)
J 12: 593 (B.C. distribution, with key to *Sagitta* & *Eukrohnia*); **16:** 351 (Gulf of Alaska distribution of above genera), 795 (*S. lyra* as E Pac. indicator species); **20:** 685 (temperature effect on *S. elegans* growth)
PRP 107: 3 (NE Pac. open & coastal waters distribution)
S 6 (*S. elegans* reproduction); **587** (*S. elegans* in upper Bay of Fundy); **762** (*Sagitta* as arctic & subarctic waters indicator species)
SS 185 (key to, & distribution of Atl.)

Chaetopoda (*see also* Annelida; Oligochaeta; Polychaeta)
C 1917–18: 237 (Canadian)

Chagnon, E. C.
J 11: 130 (sound perception in fishes)

Chain (*see* Guiding)

Chaisson, Arthur Francis
C 5: 475 (salinity effects on skate blood concentration); **7:** 67 (freshwater toxicity to flounder)
J 1: 251 (elasmobranch gastric secretion)
B 33 (shipping live lobsters)
PRA 5: 5 (mackerel for lobster bait); **6:** 10 (handling & shipping live lobsters)
SS 478 (spinal cord re skate blood osmotic pressure)

Chaleur, Bay of (*see also* St. Lawrence, Gulf of)
PRA 30: 5 (lobster biology); **35:** 8 (cod migrations); **62:** 30 (herring mortalities)

Chalinura filifera (*see* Rattail, filamented)

Chalker, Dorothy Ann
J 21: 539, 1397 (polyphosphate treatment of frozen cod)
SS 1389 (factors affecting trap cod quality)

"Chalkiness" of fish flesh
J 18: 483 (Atl. halibut; analysis)
PRP 84: 68, **88:** 61 (Pac. halibut; analyses indicate non-pathological)
CVG 33 (Pac. halibut; probable cause)

Chambers, Robert
SS 162 (nerve & egg-cell cytology); **163** (starfish hybridization)

Chamcook Lake, N.B.
C 5: 457 (pumpkinseed sunfish)
S 43 (light pentration); **173** (salmon)
SS 313 (fishes)

Chamys islandicus (*see* Scallop, Iceland)

Chan, Ming Sui
B 126: 41 (refrigerated seawater storage of Atl. cod)

Chang, Violet May
J 17: 565 (maturing sockeye tissues analyses)
S 522 (salmon liver nucleosides); **605** (spawning migratory salmon biochemistry); **653** (yeast reduction of steroids); **770** (salmon steroid hormones metabolism)

Channel cat (*see* Catfish, channel)

Chapman, Donald Wallace
J 19: 1047 (coho behaviour & emigration)

Char (*Salvelinus* species in general)
J 18: 679 (osteology & phylogeny)
PRP 32: 21 (removal as predators)
SS 700 (B.C.)

Char, arctic (*Salvelinus alpinus*) (Hudson Bay salmon; sea trout)
C 8: 19 (Hudson Bay)
J 9: 1 (Hudson Bay), 97 (Ungava Bay); **10:** 326 (ecology, Frobisher Bay); **11:** 904 (taxonomy); **12:** 487 (in Ungava Crater); **13:** 778 (B.C. distribution), 843 (Labrador); **18:** 793 (distribution & systematics)
B 72: 90 (NW Canada); **155:** 112 (full description)
CNG 64: 22, 55 (productive capacity)

S 326 (arctic & subarctic seas); **329:** 11 (Ungava Bay region); **481** (Man.)
SS 119 (James Bay); **1201** (Lake Hazen)

Char, Dolly Varden (*see* Dolly Varden)

Char, Great Lakes (*see* Trout, lake)

Char, hybrid
J 11: 652 (*Salvelinus* × *Cristivomer*)

Char, red-spotted (*see* Char, Dolly Varden)

Char, speckled (*see* Trout, brook)

Charlotte County, N.B.
J 8: 383 (limnology & trout angling); **17:** 815 (herring fishery economics)
PRA 36: 6 (trout angling yields); **47:** 3 (rock formations re trout production)

Charnley, Frank
C 7: 521 (pilchard oil hydrogenation); **8:** 507 (fish oil analysis calculations)
J 2: 285 (fish oil analysis calculations); **4:** 162 (penetrometer for canned salmon firmness)
PRP 10: 14, **19:** 7 (pilchard oil hydrogenation); **20:** 6, **21:** 18 (hydrogenated pilchard oil uses); **25:** 3 (fishing net preservation); **28:** 14 (canned salmon firmness); **29:** 12 (canned salmon colour); **30:** 11 (canned salmon free oil); **32:** 4 (canned salmon vacuum); **33:** 20 (canned salmon free juice)
SS 755 (freezing & thawing effect on herring)

Chartier, Jacqueline
S 531 (amino-acid horizontal paper chromatography)

Chase, Joseph
J 14: 931 (transporting drift buoys)

Chase, W. H.
C 1917–18: 127 (Bay of Fundy hydrography)

Chastek paralysis (*see* Paralysis, Chastek)

Chatham Sound, B.C. (*see also* Oceanography, Pacific (NE coastal waters))
J 13: 385 (oceanography)
PRP 76: 72 (seawater dilution by Skeena & Nass rivers); **106:** 24 (young salmons distribution & movements); **107:** 27 (oceanography re salmon tagging); **108:** 18 (sea–atmosphere heat exchange)
S 345 (oceanography)

Chatwin, Bruce McLeod
J 14: 953 (petrale sole tagging results); **15:** 831 (lingcod mortality rates; correction on **16:** 386)
B 96 (Johnstone Strait chum salmon tagging)
PRP 95: 35 (Pac. dogfish feeding habits); **97:** 9 (chum salmon age & size); **99:** 14, **105:** 22 (lingcod growth); **107:** 19 (lingcod tagging results)
CNG 30 (butter sole stocks)

Chauliodus macouni (*see* Viperfish, fanged)

Chauliodus sloani (*see* Viperfish)

Checklists (*see* Distribution; Fauna; Fishes, lists of; Fishes, freshwater; Flora; Insects; Invertebrates; *also* localities; scientific or common names of groups of organisms)

Cheliped (*see also* Claws; Crab; Lobster)
S 485 (abnormalities in *Cancer magister*)

Chemistry, general
B 11 (fundamental principles); **37:** 13, **59:** 13, **83:** 3 (re marine animal oils)
SS 633 (in fisheries)

Cheticamp River, N.S.
C 3: 323 (hydroids); **5:** 219 (amphipods)
PRA 29: 6 (returns of cod tagged off)
S 333 (salmon)

Chevrier, Joseph Roland Marcel
J 17: 743 (Quoddy Region currents)

Chew, Kenneth Kendall
J 15: 529 (oyster drill feeding habits); **21:** 205 (*Mytilicola* parasite in mussels)

Chiasmodon niger (*see* Swallower, black)

Chiasson, Leo Patrick
CSG 25 (scallop exploration)

Chicken feedstuffs (*see* Poultry feed)

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"Chicken haddies" (*see* Haddies, "chicken")

Chilling (*see also* Cooling; Ice; Icing; Sea water, refrigerated; Refrigeration)
J 8: 111 (value of temperatures close to 32°F.)
B 44 (live oysters)
PRA 37: 3, **44**: 8 (effect on bacteria growth); **45**: 11 (fillets by incipient freezing); **56**: 17 (lightly salted fish in pickle); **46**: 6, **62**: 32 (rate of gutted cod in holds); **46**: 3 (spoilage rates after)
PRC 1: 38, **2**: 3 (freshwater fish catches in refrigerated freshwater)
PRP 89: 76, **93**: 25 (jacketed display cabinet); **106**: 6 (live crabs in seawater)
CHO 21 (lobster meat)
CVG 30 ("slush-ice" plus salt for salmon)
S 595 (principles of, for fresh fish & fillets)
SS 1121, 1372 (methods & applications at sea)

Chilliwack River, B.C.
J 16: 721 (steelhead trout growth)

Chilomycterus schoepfi (*see* Burrfish, striped)

Chimaera, deepwater (***Hydrolagus affinis***) (***Chimaera affinis; Psychichthys affinis;*** short-finned chimaera)
J 16: 504 (St. Pierre Bank record); **18**: 893 (proximate composition)
B 155: 69 (full description)
AF 12e: 38 (description)
S 226 (on Brown's Bank)

Chimaera, knifenose (***Rhinochimaera atlantica***)
B 155: 71 (full description)

Chimaera, longnose (***Harriotta raleighana***)
B 155: 70 (full description)

Chimaera, short-finned (*see* Chimaera, deepwater)

Chimaera affinis (*see* Chimaera, deepwater)

Chimaeroids (*see* Chimaera; Ratfish)

Chinook salmon (*see* Salmon, chinook)

Chipman, Harry Ritchie
B 11 (principles of chemistry & physics); **19** (pickling & packing mackerel); **52** (pickled herring curing & packing)
PRA 3: 3 (fish meal from oily fish); **15**: 14, **17**: 3, 5 (courses for fishermen & inspectors)
S 101 (fish muscle heat capacity)

Chippindale, Nigel Kenneth
CPO 1961-27 (NE Pac. oceanographic cruise)

Chirolophis (*see* ***Chirolophus***)

Chirolophus ascani (*see* Blenny, Yarrell's)

Chirolophus galerita (a prickleback)
B 73: 10 (larvae in Lake Harbour, Baffin Is.)

Chirolophus nugator (*see* Prickleback, mosshead)

Chirolophus polyactocephalus (*see* Prickleback, decorated)

Chironomidae (*see also* Insects)
J 2: 209 (life history & morphology); **9**: 204 (in benthos of Cultus L.)

Chiropsis decagrammus (*see* Greenling, kelp)

Chisel, ice
CSG 16 (for winter fishing)

Chiselmouth (***Acrocheilus alutaceum***)
J 11: 692 (parasites, B.C.); **14**: 655 (B.C. distribution)
SS 1208: 117 (full description)

Chitin and Chitosans
J 3: 358 (chitinovorus bacteria on lobster); **10**: 521 (lobster chitosans preparation & viscosity), 583 (crab chitin characteristics)
B 125: 139 (determination in marine plankton)
PRA 19: 10 (lobster chitinovorus bacteria); **57**: 6 (glucosamine from)
PRP 71: 5 (shellfish chitin glucosamine uses)

Chiton (*see also* Mollusca)
S 748 (*Ischnochiton ruber* host of ciliate)

Chitonotus pugetensis (*see* Sculpin, roughback)

Chiu, Wing-Gay
J 16: 391 (trout blood changes after exercise); **17**: 487, **19**: 409 (glycogen, lactate, etc. changes in exercised trout)

Chlamydoselachus anguineus (*see* Eel-shark)

Chlamys islandicus (*see* Scallop, Iceland)

Chloride (*see also* Limnology; Oceanography, general; Salt; Salting; Salt fish)
J 1: 497 (secretion by elasmobranch stomach)
PRP 114: 19 (in frozen tuna)
S 487 (bacteria requirements for)
SS 757 (determination in presence of protein)

Chlorination (*see also* Disinfectants; Sanitation)
PRA 36: 14 (plant water supply); **40:** 7 (of fillet dips); **40:** 9, **47:** 10, **52:** 28, **66:** 13 (as fish plants disinfectant); **71:** 13 (for salt fish mould control)
S 596 (incompatability with antibiotics)

Chlorine (*see* Chloride; Chlorination; Dechlorination; Disinfectants; Sanitation)

Chlorinity (*see also* Oceanography)
B 125: 11 (determination procedures; revised edition in 1965)
S 172 (graphical conversion to salinity)

Chloromycin (*see* Antibiotics, tetracycline types)

Chloromyxum (parasitic protozoan)
J 21: 335 (causing "milky" flesh condition in fishes)
PRA 19: 3 (causing "jellied" swordfish flesh)
PRP 105: 11 (causing "milky" lemon sole flesh)

Chlorophyceae (*see also* Algae; Phytoplankton)
J 18: 1001, 1007 (chemical composition & pigments)

Chlorophylls and related compounds
J 14: 51 (in soils, freshwater & marine seston & sediments); **18:** 1001, 1007 (composition in marine phytoplankters)

Chlorosity (*see* Chlorinity)

Chlortetracycline (CTC) (*see* Antibiotics (tetracycline types))

Cholesterol (for derivatives, *see* Sterols)
J 16: 235 (changes in spawning migratory salmon; correction on p. 930); **17:** 113 (in organs of migrating sockeye; corrections on p. 943, 944); **17:** 597 (attempted synthesis of 17-dehydro-), 903 (marine products effect on blood level of); **18:** 377 (hypocholesterolemic activities of fish liver oils, vitamin A)
B 59, 89 (sources, characteristics, uses; *see* their indexes)
PRA 42: 6 (from white fish meal)
PRP 46: 12, **53:** 7, **56:** 3, **58:** 13, **63:** 32, **65:** 67 (in fish oil unsaponifiables); **71:** 5 (uses); **80:** 47 (from salmon offal); **88:** 51 (economics of recovery from halibut liver oil)
CVI 16 (from salmon viscera)
S 520, 536 (in spawning migratory sockeye); **593, 613, 617, 624, 691** (marine oils and sterols re hyper- & hypo-cholesterolemia); **667** (chick metabolism factors); **701** (hypocholesterolemic agents from marine algae)
SS 1174 (fatty-acid inhibition of synthesis)

Choline (*see also* Vitamin B group)
J 7: 17 (precursor of trimethylamine); **17:** 895, **18:** 285, **19:** 505 (role of, in lobster & crab metabolism); **20:** 229 (in B.C. whole herring meal)

Chondrus crispus (*see* Irish moss)

Chordata (*see also* cognate headings)
C 1917–18: 254 (E Canada marine ascidians, etc.)
AF 12d, e, f (lampreys, sharks, rays, chimaeroids: descriptions)

Chowder, fish
CFI 12 (recipe & canning)

Chowdhury, Niranjan Krishna
PRP 75: 51 (fish pyloric caeca commercial enzymes)

Christie, William John
J 20: 597 (Lake Ontario whitefish fishery), 1189 (Great Lakes white perch)

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Chromatography (Because of the very frequent application of various chromatographic methods (e.g. adsorption; gas–liquid; paper; partition) in researches pertaining to the biochemistry and chemistry of organisms and their products, reference to such applications in connection with the Board's work are too numerous to list under this general heading. Additional references to, and applications of, chromatographic methods will be found under Acids, amino; Acids, fatty; Adsorption; Esters; Lipids; Oils; Sterols; Unsaponifiables; Vitamin; etc.; *see also* other materials for which chromatographic methods are used)
S 705, 800 (preparative-scale gas–liquid chromatography apparatus); **782, 803** (catherometer & detector-block fouling); **797** (improved liquid column elution); **847** (ketoacid polymers as substrates)

Chromosomes
J 11: 927 (of salmonid fishes)

Chrosomus eos (*see* Dace, northern redbelly)

Chrosomus erythrogaster (*see* Dace, southern redbelly)

Chrosomus neogaeus (*see* Dace, finescale)

Chrysophyceae
J 18: 1001, 1007 (chemical composition & pigments)

Chub (various or uncertain species)
J 20: 735 (Lake Huron distribution)
CCG 5: 1 (proximate composition)

Chub, creek (*Semotilus atromaculatus atromaculatus*) (horned dace)
J 11: 130 (sound perception); **16:** 147 (association in Ont. streams), 816 (Miramichi R., N.B.)
PRA 20: 6 (populations in 3 N.S. lakes)
S 137, 213: 404 (Lake Jesse, N.S., population); **206** (in 3 N.S. lakes); **445** (lethal temperature limits); **448** (Man. northern limit); **481** (Man.)

Chub, flathead (*Hybopsis gracilis*) (*Platygobio gracilis*)
C 1: 424 (Athabaska R. delta)
J 13: 771, **14:** 657 (B.C. distribution); **18:** 141 (at Aklavik, N.W.T.)
B 94: 18 (N Canadian distribution)
S 448, 481 (Man. northern distribution)

Chub, hornyhead (*Hybopsis biguttata*) (*Nocomis biguttatus*)
J 16: 147 (associations in Ont. streams)
S 448, 481 (Man. northern distribution)

Chub, lake (*Hybopsis plumbea*) (*Couesius plumbeus; C. greeni;* northern chub; chub minnow)
J 9: 106 (Ungava Bay); **11:** 692 (parasites, B.C.); **12:** 499 (in Skeena R. system lakes); **13:** 769, **14:** 656 (B.C. distribution); **16:** 817 (Miramichi R., N.B.)
B 94: 18 (N Canadian distribution)
PRP 72: 28, **78:** 6 (re salmon in Skeena R. lakes)
CCG 4: 10 (smoked)
S 144 (B.C. & Ont. lakes); **448** (Man. northern limit); **481** (Man.)
SS 1208: 121 (full description); **1345** (smoked)

Chub, minnow (*see* Chub, lake)

Chub, northern (*see* Chub, lake)

Chub, peamouth (*Mylocheilus caurinum*) (peamouth)
J 10: (upper lethal temperature); **11:** 691 (parasites, B.C.); **12:** 499 (in Skeena R. system lakes); **13:** 769, **14:** 657 (B.C. distribution)
B 55: 34 (feed; merganser prey); **56:** 36 (Okanagan L., B.C.)
PRP 66: 12, **68:** 55, **74:** 6, **78:** 6 (re salmon in Skeena R. lakes)
S 144: 67 (in B.C. lakes)
SS 1208: 111 (full description)

Chub, river (*Hybopsis micropogon*)
J 16: 147 (associations in Ont. streams)

Chub, silver (*Hybopsis storeriana*)
S 448 (Man. northern limit); **481** (Man.)

Chub, streamline (*Couesius dissimilis*) (*Hybopsis dissimilis*)
B 94: 18 (N Canadian distribution)

Chubb Crater (*see* Ungava Bay and region, Que.)

Chubsucker, lake (*Erimyzon sucetta*)
S 481 (doubtful Man. occurrence)

Chukchi Sea (*see also* Oceanography, arctic)
PRP 81: 79 (Canadian–U.S.A. oceanographic expedition, 1949)
SS 1047 (as above)

Chum salmon (*see* Salmon, chum)

Churchill, Man. (*see also* Hudson Bay; Oceanography, subarctic)
C 6: 472 (fishes)

Chute Lake, B.C. (*see also* Okanagan Lake)
B 56: 23 (limnology, biological survey)

Ciliata
C 1917–18: 229 (Canadian Atl. check-list & index); **2**: 531 (Strait of Georgia Tintinnidae)
J 12: 143 (Heterocricha: folliculinids from B.C.)
PRP 11: 24 (tintinnids in pilchard feed)
PF 1f (Canadian Pac.: descriptions)
S 76: 10, 17, **88** (B.C.); 166 (feed selection by *Chilodon*); **243** (*Chilodon* as salmonid parasite); **563** (*Calipera* epizoic on skate); **648** (re Atl. oyster disease); **748** (new *Urceolaria* species)
SS 351, 387 (Strait of Georgia Tintinnidae)

Circulation (of water, *see* Currents; **of blood,** *see* Blood; Physiology, circulatory system)

Circuli (*see* Age determination; Scales; Scales, age determination from)

Cirripedia (*see also* Barnacles)
C 1917–18: 249 (Canadian); **2**: 469 (B.C.)
PF 10e (descriptions)
S 587 (upper Bay of Fundy)
SS 53 (new rhizocephalan); 1065 (*Mycetomorpha* rediscovery in B.C.)

Cisco (*Coregonus artedii*) (*Leucichthys artedii*; lake herring)
C 6: 198 (Bay of Quinte, Ont.), 225 (Lake Ontario); **8**: 8 (Hudson & James bays)
J 9: 100 (Ungava Bay); **19**: 1013 (morphometric comparison with *L. alpenae* in Lake Erie)
CCG 5: 1 (fillet proximate composition)
CVI 9, 12, 13 (constituents; proximate composition; vitamins A & D)

Cisco, blackfin (*Coregonus nigripinnis*)
CNG 64: 67 (productive capacity)

Cisco, Bonneville (*Prosopium gemmiferum*)
J 18: 679 (osteology; phylogeny)

Cisco, least (*Coregonus sardinella*) (lake herring)
J 14: 657 (B.C. distribution); **18**: 679 (osteology; phylogeny)
SS 1208: 47 (full description)

Cisco, longjaw (*Coregonus alpenae*)
J 18: 679 (osteology; phylogeny); **19**: 1013 (morphometric comparison with *Leucichthys artedi* in Lake Erie)

Cisco, shortnose (*Coregonus reighardi*)
J 18: 679 (osteology, phylogeny)

Ciscoes (*Coregonus* or *Leucichthys* species in general)
C 1921: 73, 87 (Lake Erie); **1**: 432 (Lac la Biche "tullibee") **5**: 467 (W Canadian lakes); **7**: 325 (Man. waters), 341 (*Triaenophorus* parasite); **8**: 8 (Hudson & James bays)
J 5: 428 (vitamins A & D in oils); **6**: 334 (*Triaenophorus* effect on growth); **8**: 207 (Great Slave L.), 469 (taxonomy, Lake Winnipeg); **10**: 51 (morphometry, Great Bear L.); **14**: 599 (evolution & distribution); **15**: 214 (Heming L., Man.), 607 (preferred temperature & vertical distribution); **16**: 137 (Lake Winnipeg commercial species); **19**: 1013 (morphometry, Lake Erie)
B 72: 39 ("Bear Lake herring"); **72**: 59, **107** (Great Slave L.); **72**: 78 (Lake Athabaska); **82** (Great Bear L.); **92**: 6 (mink feed); **94**: 10 (Canadian Arctic & Subarctic); **119** (growth)
PRP 74: 19 (canning); **75**: 35 (smoking); **76**: 78, **93**: 18 (reduction to meal & oil)
CNG 64: 66 (productive capacity)
S 144: 64 (*Leucichthys pusillis*, Atlin L., B.C.); **481** (Man.)

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SS 117, 119 (James Bay); **358** (prairie provinces tullibee industry); **403** (daily movements), **409** (Lake Ontario)

Citharichthys sordidus (*see* Sanddab, mottled)

Citharichthys stigmaeus (*see* Sanddab, speckled)

Citric acid (*see* Preservatives)

Cladocera

C 4: 107 (nutritional physiology)

J 5: 138 (periodicity in numbers); **11:** 244 (Belle Isle Strait), 596 (*Daphnia* stock & recruitment); **21:** 291 (*Daphnia* vertical movements)

PRP 11: 24 (pilchard feed); **13:** 8 (trout feed); **21:** 14 (sockeye feed); **70:** 10, **78:** 6 (*Daphnia* in Skeena R. system lakes); **103:** 19 (B.C. coastal inlets)

S 50 (Entomostraca ecology, etc.); **104** (ultraviolet light effects on); **185** (feed in fertilized waters); **796** (*Daphnia* in toxicity bioassays)

SS 226 (SW Ont.); **234** (new American); **293** (notes on freshwater); **294** (*Daphnia* pH range); **464, 516** (Alaskan freshwater); **569** (N.S. freshwater); **696** (B.C. distribution)

Clagget, Freddie Gene

J 21: 845 (air-lift fish pumping)

PRP 114: 3 (fresh fish air transport packaging)

CVG 25 (herring-meal lipids nutritional & chemical changes); **28, 29** (unloading fish by pumping); **30** (salmon packing equipment & operation); **32** (bulk handling of herring meal)

S 641, 704 (storage & antioxidant effect on herring meal)

Clam, bar (*Apisula solidissima*) (*Mactra solidissima*)

B 75 (occasional toxicity); **102** (Maritimes resource survey); **128** (mechanical harvesting)

PRA 35: 18 (growth rate); **71:** 21 (resource & future prospects)

CFI 24 (canning)

CHO 32 (canning)

S 518 (occasional toxicity)

Clam, butter (*Saxidomus giganteus*)

J 5: 344 (proximate composition of canned); **8:** 369 (digging frequency vs. productivity)

PRP 6: 12 (description); **40:** 11, **82:** 3 (occasional toxicity); **46:** 6 (identification); **51:** 7, **54:** 14, **62:** 13, **70:** 22, **74:** 22 (yields); **61:** 4 (legal vs. maturity size); **69:** 63 (digging frequency); **95:** 45 (vitamin B)

CNG 64: 51 (productive capacity)

CVI 3 (analysis of canned); **17** (B vitamins)

S 13 (pentose compounds in organs); **16** (crystalline style re respiration); **73** (B.C. ecology); **74** (feed re growth rate); **238** (B.C. investigation); **245** (description; uses); **255** (productivity); **262** (B.C. biology & catches); **406** (new sterol in); **453, 851:** 60 (B.C. fishery); **467** (vitamin B_{12}-synthesizing bacteria in); **619, 637, 659** (sterol biosynthesis); **624** (hypocholesterolemic factor in); **771** (plankton toxicity to *Cristispira* in style); **844** (sperm deoxyribonucleic acids)

SS 337 (spawning & free larval period); **461** (ecology, feed, growth rate); **818** (B.C. fishery); **1206** (*Cristispira* in crystalline style)

Clam, geoduck (*Panope generosa*)

PRP 46: 6 (identification)

S 245 (description; uses)

Clam, hardshell (*see* Quahaug)

Clam, horse (*Schizothaerus nuttali*)

PRP 40: 11 (occasional toxicity)

S 238 (B.C. investigation); **245** (description; use); **262** (B.C. biology & catches)

Clam, Japanese littleneck (*Paphia philippinarium*) (*Tapes philippinarium*) (*see also* Clam, Manila)

PRP 48: 17, **61:** 3 (accidental introduction into B.C., and spread of)

S 245 (description; use)

Clam, littleneck (*Paphia staminea*) (*Protothaca staminea; Venerupis staminea*)

J 6: 140 (gonad development seasonal changes)

PRP 6: 12 (description); **46:** 6 (identification); **95:** 45 (vitamin B_{12})

CNG 64: 51 (productive capacity)

S 72 (B.C. ecology); **74** (feed re growth rate); **238** (B.C. investigation); **245** (description; use); **262** (B.C. biology & catches); **286, 453, 851:** 61 (B.C. fishery); **310** (vitamin B_{12}); **844** (sperm deoxyribonucleic acids)

SS 461 (ecology, feed, growth rate); **893** (movements)

Clam, Manila (*Venerupis japonica*) (*see also* Clam, Japanese littleneck)

J 15: 529 (predation by oyster drill); **21:** 1155 (introduction & distribution in B.C.)

Clam, mud (*Mya arenaria*) (on Pac. coast)

J 5: 344 (proximate composition of canned); **21:** 1155 (probably an introduced species)

PRP 40: 11 (occasional toxicity); **46:** 6 (identification)

S 245 (description; use)

Clam, razor (Atlantic) (*Ensis directus*)

B 75 (occasional toxicity)

PRA 71: 21 (resources & future prospects)

Clam, razor (Pacific) (*Siliqua patula*)

PRP 6: 12 (description); **46:** 6 (identification); **53:** 14 (whitening flesh for canning)

CNG 64: 51 (productive capacity)

S 238 (B.C. investigations); **245** (description; use); **262** (B.C. biology & catches); **286, 453, 851:** 61 (B.C. fishery); **740** (digging & use)

SS 374 (Queen Charlotte Is.)

Clam, rock-borer (*Zirfaea gabbi*)

S 245 (B.C. description)

SS 245 (B.C. description)

Clam, sand (*Macoma secta*) (*see also Macoma*)

PRP 46: 6 (identification)

S 245 (description; use)

Clam, softshell (*Mya arenaria*) (on Atl. coast)

C 1901: 19 (fishery, life history, use); **1906–10:** 29 (as cod bait), 231 (recognition of larvae); **1921:** 1 (bacteriology, Passamaquoddy Bay); **4:** 81 (bacteriology; growth factors), 95, 227 (muscle bacterial decomposition)

J 7: 98 (thiaminase in); 219 (snail commensalism); **15:** 1355 (clam drill control); **17:** 291 (nematode parasite); **19:** 877 (re Passamaquoddy tidal power project); **20:** 983 (occasional toxicity)

B 75 (occasional toxicity); **77:** 11 (P.E.I. larvae); **128** (mechanical harvesting)

PRA 3: 10 (Bay of Fundy resource); **32:** 8 (Northumberland Strait survey); **35:** 3 (culture; predators; transplantation); **50:** 17 (burrowing & movements); **52:** 3 (winter flounder predation); **54:** 19 (breakage during handling); **63:** 3 (green crab as enemy); **66:** 3 (mechanical digger); **71:** 21 (resource & future prospects)

CFI 17, 24 (shucking & canning)

CHO 32 (washing equipment; canning)

CNG 64: 25 (productive capacity)

CSG 26 (green crab as enemy)

S 7 (respiration); **279** (green-gilled, P.E.I.); **518** (1957 epidemic of toxicity); **761** (hydraulic harvester effect on small)

SS 192 (anaerobic respiration); **243** (insulin-like substance in); **561, 599, 600** (growth rate & index; abundance); **1369** (hydraulic harvester)

Clam products (*see* names of individual clam species; Cockle; Clams, Atlantic; Clams, Pacific; Quahaug)

Clams, arctic (general)

S 558 (*Macoma*, etc.)

Clams, Atlantic (general; *see also* names of individual species; *also* Shell; Shellfish occasional toxicity)

C 1901: 24 (Bay of Fundy region)

J 15: 1141 (review of investigations)

B 77 (larvae descriptions); **128** (mechanical harvesting)

PRA 3: 3, **58:** 17 (for bait); **5:** 5 (feed for holding lobsters), 10 (shipping frozen shucked); **23:** 8 (shrinkage during canning); **63:** 3 (green crab as enemy); **66:** 3 (mechanical digger)

SS 119 (James Bay); **953** (eliminating shell breakage); **1061** (problems)

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Clams, Pacific (general; *see also* names of individual species; Nectar, clam; *also* Shell; Shellfish occasional toxicity)
PRP 39: 19 (conservation problems); **50**: 21 (enemies); **53**: 9 (nutritive value of canned); **96**: 11 (indigenous bacteria); **112**: 10 (occasional toxicity)
S 453 (B.C. fishery)
SS 80, 101, 856 (reports on B.C. beds); **244** (insulin-like substance in); **337** (spawning & free larval periods); **562** (2 new Nuclulanidae); **779, 801** (biological investigations); **1262** (distribution)

Clamworm (*see* Sandworm)

Clancy, Dan Wiley
J 20: 969 (tagged steelhead trout swimming ability)

Claridge, Charles Alfred
S 533 (Na re marine bacteria metabolism)
SS 1223 (tricarboxylic acid cycle enzymes)

Clark, Annie Elizabeth
PRA 16: 10 (Atl. oyster development)
SS 421 (a new and other *Nebaliella*)

Clark, Austin Herbert
C 1: 21 (James & Hudson bays echinoderms)
J 3: 350 (Hudson Bay echinoderms)

Clark, Hubert Lyman
C 1: 25 (James & Hudson bays Holothuroidea)

Clark, John Russell
J 15: 1239 (haddock scale–otolith age comparisons; correction on **16**: 929)
S 554 (ICNAF re Gulf of St. Lawrence trawl fishery); **555** (ICNAF gear selection research); **610** (NW Atl. haddock stocks definition)

Clarke, Charles Henry Douglas
SS 687 (Lake Nipissing region birds)

Clarke, George Leonard
SS 810 (mathematical formulation of biological productivity)

Clarke, Malcolm Roy
J 20: 853 (new NW Atl. squid record)

Claspers
J 1: 261 (function of skate)

Classification (*see also* Taxonomy and systematics)
SS 257 (of biotic communities)

Claws
J 18: 367 (inactivating lobster)
B 118: 9 (of ringed seal re age determination)
S 485 (abnormalities of crab); **681** (banding lobster)

Clay, Charles Herbert
J 17: 507 (fish passage re Passamaquoddy tidal power project)

Cleaning (of fish: *see* Gutting; Washing; of vessels and holds: *see* Disinfectants)

Clearing of streams (*see* Obstructions)

Clemens, Lucy Smith
C 1918–20: 69 (muttonfish biology)
S 77, 90, 91, 92, 107, 113, 115, 118, 122, 134, 145, 179 (contributions to life history of sockeye: No. 11–22)
PRP 32: 3 (obituary of)

Clemens, Wilbert Amie
C 1911–14(II): 113, 131 (Ont. mayflies ecology, etc.); **1918–20**: 69 (muttonfish biology); **1921**: 73, 87 (Lake Erie ciscoes)
J 7: 215 (obituary of C. McL. Fraser); **9**: 141 (first B.C. smooth lumpsucker); **15**: 779 (reminiscences as Nanaimo Station director); **20**: 1349 (obituary of Edith Berkeley)
B 4 (muttonfish life history, fishery); **15, 26, 27** (Vancouver Is. salmon tagging); **17** (waterfowl predation on herring & ova); **53**: 1 (Foreword); **55** (merganser re B.C. fish population); **56**: 1, 27, 51 (Okanagan lakes fishes & fish cultural problems); **68, 68R** (B.C. marine fishes)
PRP 1: 5 (Nanaimo Station functions); **4**: 11 (chinook salmon tagging); **17**: 3 (Nanaimo Station 25th anniversary); **19**: 3 (squawfish feed); **23**: 3 (B.C. sharks); **25**: 9 (B.C. rays); **29**: 8 (B.C. lamprey & hagfish); **40**: 3 (B.C. flatfishes); **66**: 3 (obituary of G. H. Wailes)
S 77, 90, 91, 92, 107, 113, 115, 118, 122, 134, 145, 179, 195, 219, 233 (contributions to life history of sockeye salmon,

No. 11–25); **160** (fur seal stomach contents); **197** (Shuswap L. limnology); **212** (B.C. merganser feeding habits)

SS 59, 110 (mayflies); **318** (plankton methods standardization suggestions); **319, 533, 986** (Pac. salmons investigations); **336** (B.C. biological publications, 1922–29); **364** (B.C. sockeye conservation); **365** (Nass R. sockeye situation); **366, 639, 671** (Pac. salmons migrations); **397** (fish cultural officers course); **398, 702** (Nanaimo Station work); **422** (Canadian fish cultural aims); **423** (sea as Nature's laboratory); **435, 503, 597** (B.C. merganser feed); **452** (B.C. flora & fauna checklist); **453** (fur seal feed); **497** (predatory & coarse fish re fish culture); **480** (chinook salmon feed in Shuswap L.); **532** (sockeye maturity age & sex proportions); **583** (natural vs. artificial sockeye propagation); **602** (Pac. salmons home stream theory); **607** (kokanee); **608** (B.C. trout investigations); **640** (Okanagan L. fishes); **641** (water bodies productivity); **700** (B.C. salmons, trouts, chars); **701** (Kamloops trout & kokanees external characteristics); **729** (B.C. fish conservation); **730, 741, 756, 771, 796, 811, 824, 848, 880** (contributions to life history of sockeye salmon, No. 26–34); **823** (obituary of C. McL. Fraser); **825** (Fisheries Research Board not opening charges); **844, 984, 1208** (B.C. freshwater fishes); **847** (Paul L. limnology); **849** (common & scientific names of Canadian & U.S.A. fishes); **987** (Board organization & program); **1108** (B.C. fisheries resources history); **1216** (sockeye spawning migration energy expenditure)

J 21: 869 (an appreciation of)

J 21: (i) (obituary of)

Clevelandia ios (*see* Goby, arrow)

Clidoderma asperrimum (*see* Sole, roughscale)

Climate (*see* Weather; *also* Oceanography; Storms; Wind effects; *also* other cognate subjects)

Clingfish, common (*see* Clingfish, flathead)

Clingfish, flathead (***Gobiesox maeandricus***) (***Sicyogaster maeandricus***; common clingfish)
C 8: 161 (nematode infection)
B 68: 334, **68R**: 396 (full description)
S 290 (records)

Clingfish, kelp (***Rimicola muscarum***)
B 68: 335 (description as slender clingfish); **68R**: 397 (full description)
S 143 (first B.C. record)

Clingfish, slender (*see* Clingfish, kelp)

Clinocardium nuttalli (*see* Cockle, basket)

Clinocottus acuticeps (*see* Sculpin, sharpnose)

Clinocottus embryum (*see* Sculpin, calico)

Clinocottus globiceps (*see* Sculpin, mosshead)

Clinostomus elongatus (*see* Dace, redside)

Cliona celata, C. lobata (*see* Sponges)

Clostridium species (*see also* Botulism)
C 4: 257 (in fish intestines)
J 7: 62 (growth in seaweeds & fish), 70 (effect of salt & smoke on growth)

Clostridium botulinum (*see* Botulism)

Clupea harengus harengus (*see* Herring, Atlantic)

Clupea harengus pallasi (*see* Herring, Pacific)

Clupea pallasii (*see* Herring, Pacific)

Clupeidae (*see also* Alewife; Herring; Shad)
C 1902–05: 95 (eggs & early life history)

Coachman, Lawrence Keyes
J 13: 709 (oceanography of Hebron Fiord, Labrador)

Coarse fish (*see also* Competition; Discards of fish at sea; Poisons, for natural waters; Predation; Predators)
J 12: 543 (in lakes)

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PRP 32: 21 (removal as lake predators)
SS 479, 861 (re fish culture)

Cobalamins (*see* B_{12} *under* Vitamin B group)

Cobalt compounds (*see also* B_{12} *under* Vitamin B group)
J 12: 642 (in fish & mammal livers); **16**: 7 (in Atl. coastal seawater); **20**: 229 (in B.C. whole herring meal)
S 744 (rancidity promotion in groundfish)

Cockle (*Cardium corbis*)
PRP 40: 11 (occasional toxicity); **46**: 6 (identification)
S 238 (B.C. investigation); **245** (description; use); **433** (new sterol in)
SS 402 (ecology)

Cockle, basket (*Clinocardium nuttalli*)
S 844 (sperm deoxyribonucleic acids)

Cod, Alaska (*see* Sablefish)

Cod, arctic (*Boreogadus saida*) (polar cod)
C 8: 38 (Hudson Bay)
J 9: 108 (Ungava Bay); **11**: 248 (Belle Isle Strait); **16**: 819 (Miramichi Bay, N.B.)
B 73: 2 (E Canadian Arctic young); **155**: 189 (full description)
CNG 64: 56 (possible fishery potential)
SS 1324 (arctic distribution & ecology)

Cod, Atlantic (biology) (*Gadus morhua*) (*G. callarias*) (*see also* Cod, Atlantic (products); Cod, Atlantic (salted); Groundfish; International Commission for the Northwest Atlantic Fisheries; for infection by codworm, *see Phocanema decipiens*)
C 1902–05: 91 (trematode parasites); **1906–10**: 23 (bait for); **1914–15**: 103 (life history); **1**: 413 (body temperature); **4**: 287 (scale zones); **8**: 38 (Hudson Bay). 275, 291 (slime & intestinal bacteria). 433 (coastal movements)
J 5: 105 (spawning); **7**: 128 (microorganisms on & in living); **9**: 109 (Ungava Bay); **11**: 251 (Belle Isle Strait); **11**: 894. **13**: 343, **14**: 831, 975, **15**: 495, **16**: 213, **17**: 763, **20**: 743 (infection by nematodes); **12**: 698 (stocks distinguished by vertebral number); **15**: 573 (lethal hyperactivity), 625, **21**: 429 (distribution & landings, re temperature & fishery); **15**: 699, **16**: 449 (abnormal flesh pigmentation); **15**: 1269 (price re fishery), 1371 (mortality rates), 1383 (reproduction & feeding); **16**: 819 (Miramichi estuary); **17**: 775 (growth & maturity); **19**: 445, **21**: 215 (tagging); **20**: 373 (respiration), 497 (discards at sea), 679 (tissue explant cultures); **21**: 57 (growth variations), 347 (wound healing), 413 (asymmetrical pair of otoliths)
B 7: 7 (Langerhans islet tissue re insulin); **18** (Belle Isle Strait fishery); **61** (fishery off Halifax); **105** (tagging & recaptures); **109, 141** (Nfld. longlining); **119** (population computations; *see* its index) **155**: 194 (complete description)
PRA 10: 4 (skin pigmentation changes); **12**: 3, **17**: 11, **33**: 7 (re water temperatures); **13**: 10, **68**: 15 (spawning); **13**: 10, **67**: 31 (eggs); **15**: 3, **22**: 3, **25**: 3, **26**: 8, **28**: 14, **29**: 6, **35**: 8, **64**: 10, **67**: 6, **72**: 8 (tagging; marking; movements); **16**: 7, **72**: 3 (in captivity); **22**: 12, **72**: 3 (feeding); **23**: 10, **31**: 3 ("putty" flesh condition); **24**: 6, **25**: 3, **62**: 4, **68**: 9, **70**: 3 (fishery); **33**: 7 (water temperature effect on fishing); **48**: 10, **72**: 3 (nematode infection); **58**: 17 (bait for); **69**: 33 (savings gear); **72**: 3 (growth)
PRP 75: 57 (predation by hagfish)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CNG 64: 9 (productive capacity), 56 (arctic limits)
CSG 2 (offshore landings, 1938–40); **37** (discards at sea); **38** (source of Seven Is. cod)
CSS 1, 2, 3, 4, 5, 6 (N.S. landings, 1947–52); **7, 8, 9** (Maritimes landings, 1953–55)
MSP 2 (whelks & mussels as bait for)
NRB 4: 13 (Nfld.); **14** (biology, economics: Nfld.)
NSB 8: 14 (life history, Nfld.)
S 111 (myxosporidian parasites); **234** (P.E.I.); **329** (Ungava Bay); **354** (fishery situation); **379A** (re ocean climatic changes); **413, 791** (NW Atl. stocks); **756** (transatlantic migration); **805. 819** (metabolism re lipids fatty acids distribution); **850** (selectivity of hooks & trawl meshes); **852, 853, 854** (growth, tagging, mortality); **864** (retention of dietary fatty acid patterns); **874** (trawl mesh selectivity); **875**,

876 (tags, tagging, recoveries); **878** (*Lernaeocera* parasitic copepod as movement indicator)

SS 171 (tide effect on distribution); **179** (embryology); **282** (re oceanography); **497, 559, 1126** (re sea temperatures); **673** (possible hybrid with haddock); **1184, 1192, 1211, 1212, 1238, 1254, 1289, 1300, 1325, 1335, 1336, 1361, 1368, 1415** (length frequencies); **1191** (characteristics of catches for salting); **1207, 1282, 1283, 1284** (reproductive & aggressive behaviour); **1242** (Gulf of St. Lawrence); **1247** (feeding & growth changes); **1284** (sound production by); **1304** (productive capacity)

Cod, Atlantic (products) (other than salt cod) (*see also* Cod, Atlantic (salted); Fillets; Quality; Trimethylamine; for codworm in, *see Phocanema decipiens*)

C 1918–20: 99 (flesh putrefaction rate); **2**: 122 (insulin); **3**: 467 (muscle tensile strength re smoking); **8**: 227 (effect on dog gastric secretion)

J 1: 179 (non-protein nitrogen flesh constituents); **3**:2 (fillet smoking), 77, **4**: 63, 252, 355, 412, **5**: 32, 197, **6**: 53, 359, 403, **7**: 370, 430, **9**: 148, **13**: 27, 291, 861, **14**: 617, 775, **16**: 13, 21, 43, **18**: 143, 641, **21**: 423 (spoilage causes, mechanism, products, assessment); **3**: 102 (sterilizing canned), 473, **5**: 221 (pyloric caeca & intestine enzymes); **5**: 203 (muscle juice buffering capacity); **6**: 45 (spoilage bacteria glucose metabolism), 441 (KI or glucose as preservative), 491 (trimethylamine effect on bacteria growth); **7**: 62, 70 (*Clostridium* growth in), 96 (thiaminase in muscle & viscera), 370 (fillet spoilage bacteria), 378 (fillet bacteria counts re quality), 421, 461, 528, 536, 580 (interrelation of $NaNO_2$ preservative to trimethylamine & bacteria re fillet quality), 430 (*Pseudomonas* growth in fillets); **7**: 449, **21**: 577 (fillet palatability); **7**: 585, **12**: 75, **15**: 135, **16**: 33, 53, 63, 243, **19**: 591, 1095 (tissue fractions & extracts; myosin, tropomyosin & actin); **8**: 111 (value of storage close to 32° F. when fresh), 325 (protein denaturation by brines); **9**: 129 (liver protein vitamin B_{12} activity), 148 (*Flavobacterium* role in spoilage), 388 (water transfer in brining muscle); **11**: 355 (liver residues & vitamin B_{12} concentrates); **12**: 85, **15**: 1269 (landings re prices); **12**: 641 (liver extracts & hydrolysates); **13**: 183 (bile as bacteria inhibitor), 209, 559, **16**: 539 ($NaNO_2$ ice & dips as preservatives); **13**: 291 (effect of gill removal on storage quality), 861, **14**: 617, 775, **16**: 13, 21 (spoilage odours; correction on **14**: 998); **13**: 869 (animal feed from viscera); **14**: 627, 925 (storage temperature effect on frozen fillets), 831, 975, **15**: 537, **16**: 213, **17**: 501, **18**: 137 (nematode detection & removal from fillets); **15**: 699, **16**: 449 (atypical flesh pigmentation); **15**: 701, 717, 729, **21**: 577 (grading fillets for quality); **16**: 43, **18**: 143 (lipid hydrolysis in frozen tissues); **16**: 63 (muscle extractives analysis), 223, **18**: 295, 303 (seasonal variations in catch quality); **16**: 747 (flesh amino acids chemistry); **18**: 85 (protein quality of protein concentrate, liver & visceral meal), 501 (tropomyosin amino acids), 641 (rigor mortis changes), 865 (fatty alcohols from liver oils), 893, **20**: 909, **21**: 703 (composition & seasonal variations); **19**: 605 (methyl esters from fatty acids), 839, **20**: 89 (liver oil air-blowing & fatty acids of); **19**: 1039, **21**: 1489 (protein concentrate); **19**: 1081 (oil free fatty acids); **21**: 101, 539, 1397 (polyphosphate treatment of frozen), 115 (water thawing of frozen), 319 (liver oil fatty acids), 367 (flesh fatty acids), 423 (dimethyl sulphide odour re "blackberry" condition), 469 (roe fatty acids), 577 (cooking frozen fillets re palatability), 719 (electronic thawing), 1345, 1361, 1371 (rancidity)

B 7: 7, 22 (insulin); **9**: (processing of dried); **20** (frozen fillets); **59, 89** (chemistry & technology of oils; *see* their indexes); **100, 103** (handling on trawlers); **109** (catches & value, in Nfld. longlining experiment); **126**: 41 (storage in refrigerated seawater); **138** (antibiotic dips for fillets)

PRA 1: 9, **32**: 5 (oil from stored chilled or frozen livers); **2**: 7 (fillet cold storage changes); **9**: 6 (meal in animal feeding);

15: 4, **30**: 10, **44**: 8, **46**: 3 (spoilage rate); **19**: 11, **25**: 5 (canning as "chicken haddies"; correction on **27**: 17); **20**: 3 (trimethylamine oxide reduction during spoilage); **21**: 6, **29**: 12 (liver oil extractor); **23**: 10, **31**: 3 (flesh "putty" condition); **24**: 3 (acid dips for fillets); **27**: 7 (liver canning); **29**: 11 (oil recovery from pressed liver residue); **29**: 19 (oil from sun-rotted livers); **34**: 10, **36**: 19 (fillet smoking); **34**: 19 (liver oil alkali refining); **37**: 3 (spoilage of iced gutted); **38**: 10 (spoilage in freshly cut fillets); **40**: 3 (leaching of iced gutted); **40**: 7 (chlorinated dip for fillets); **41**: 4, **73**: 19 (fillet palatability tests); **46**: 6 (cooling rate in holds); **48**: 4 (canned liver paste); **48**: 4, **49**: 3 (new liver oil liberation process); **48**: 4, **49**: 5, **54**: 3 (liver meal); **54**: 3 (liver vitamin B_{12}); **55**: 11 (B vitamins in round & filleted); **62**: 10 (bile recovery from gall bladders); **65**: 21 (bile acids); **65**: 24 (acid ensilage from offal); **67**: 29 (protein concentrate from offal); **68**: 17 (oil from preserved livers); **71**: 17, **72**: 37 (frozen fillets fat hydrolysis); **73**: 4 (skins for glue manufacture)

PRP 54: 4 (liver oil & vitamins)

CFI 5 (candling fillets for nematodes); **9** (liver canning)

CGR 8 (liver oil extractor); **12** (boneless fillets); **13** (fresh & frozen fillets)

CHO 29, 35 (fillet smoking); **30** ("chicken haddie" canning); **36** (flesh "putty" condition)

CHN 6 (machine for slicing fillets for candling); **7** (blowing liver oil for lubricant additive); **10, 15** (protein concentrate)

CVI 11 (essential amino acids in liver hydrolysate); **17** (flesh amino acids & vitamins A, B, D)

NSB 1 (Nfld. dried fish industry); **3** (Nfld. cod oil); **9** (approved Nfld. drying methods)

S 38, 52 (rigor mortis lactic acid); **41** (bacteriology); **101** (muscle heat capacity); **324** (frozen storage protein denaturation); **349, 805, 819** (lipid fatty acids); **428** (liver vitamin B_{12} constituents); **439** (fillet B vitamins); **551A** (antibiotics for gutted & filleted); **565** (seaweedy odour); **566** (cold storage life); **633, 780, 801** (muscle protein fractionation & fractions); **677** (liver paste formula); **685** (excessive drip in frozen blocks); **781** (refrozen fillets quality changes); **834** (thawing blocks in water)

SS 273 (insulin); **619** (precipitation test to distinguish cod from haddock flesh); **751** (flesh extracts conductivity & viscosity); **882** (fillet taste panel tests); **981** (processing liver oil); **1191, 1389** (characteristics of catches for processing); **1202, 1328, 1383** (protein concentrates); **1237** ("wet frozen" for fish sticks)

Cod, Atlantic (salted) (*see also* "Dun"; "Reddening"; Salt; Salt fish)

J 3: 70, **5**: 438, **6**: 10, 17, **9**: 157, 377, **11**: 261, **13**: 183, 195 (reddening halophilic bacteria sources, differentiation, enumeration, growth, inhibition); **3**: 439 (salt concentration re keepability); **4**: 136 (muscle moisture coefficients); **5**: 249, **7**: 70 (pathogenic bacteria survival); **5**: 276, 287 (halophilic brown moulds); **6**: 1 (effects of salt from various sources), 380 (drying of heavily salted); **7**: 430 (*Pseudomonas* growth in brined fillets); **8**: 325 (protein denaturation by brines); **9**: 388 (water transfer during brining); **11**: 901 (*Sporendonema* fungus growth conditions); **12**: 68, **15**: 543 (artificial drying); **15**: 555 (phospholipids fatty acids); **18**: 833 (light pickle salting), 845 (partial desalting of), 851 (chemical characteristics)

B 9, 112 (processing)

PRA 18: 7 (nature of salt preservation); **20**: 8, 10, **24**: 17, **35**: 26, **53**: 8, **56**: 23 (humidity effect on drying); **23**: 10, **31**: 3 (flesh "putty" condition); **30**: 8 (salting by weight); **32**: 6, **33**: 3 (effect of variables on salt uptake); **34**: 15 (boneless fillets artificial drying); **35**: 26 (dryer construction); **37**: 18 (hard-salted drying); **45**: 14, **60**: 3 (yellow stains from impure salt); **47**: 5, **52**: 22, **60**: 15, **62**: 3 (moisture loss calculations); **47**: 10 (plant clean-up & disinfection); **49**: 7 (storage & transportation conditions); **52**: 15, **71**: 3 (heavily salted pickled); **52**: 18, **71**: 3 (Gaspé cure); **52**: 22 (quantitative yields); **53**: 8 (equilibrium moisture curves); **55**: 3 ("sliming" in light-salting); **56**: 17 (chilling lightly salted in pickle); **62**: 7 (splitting table), 38 (automatic washer); **66**: 16 (changes in fat); **69**: 28 (sodium phosphate

crystals on); **71**: 3 (comparison of various types); **72**: 19 (amino acids & fluorescence in salt pickle)
  CGR 3, 4 (preparation, drying, storage)
  CHN 4 (salt content determination); **5** (bibliography)
  CJG 1, 2, 3, 4, 5, 6, 7 (Nfld. landings for)
  NSB 1 (Nfld. industry); **4** ("pink" discoloration); **9** (Nfld. approved salting methods)
  S 523 (sodium phosphate crystals on)
  SS 229 (red discoloration); **642** (storage & transport); **704, 742, 927** (drying); **757** (salt content determination); **790** (processing); **989** (Gaspé cure); **1123** (ICNAF interest in); **1152** (halophilic bacteria salt tolerance); **1233** (salt effect on decomposition); **1235** (volatile constituents of); **1250** (light-salting technology)

Cod, black (*see* Sablefish)

Cod, dried (*see* Cod, Atlantic (products); Cod, Atlantic (salted))

Cod, gray (*see* Cod, Pacific)

Cod, Greenland (*Gadus ogac*) (ogac; pilot)
  C 8: 40 (Hudson Bay)
  J 9: 109 (Ungava Bay); **11**: 247 (Belle Isle Strait); **14**: 859, **17**: 762 (nematodes in); **16**: 820 (Miramichi Bay, N.B.)
  B 155: 199 (full description)
  S 336 (Miramichi Bay)
  SS 117, 119 (James Bay); **974** (Cape Breton, N.S.); **1324** (arctic distribution & ecology)

Cod, ling (*see* Lingcod)

Cod, longfin (*Antimora rostrata*)
  J 18: 291 (off B.C.)
  B 68: 133, **68R**: 167 (full description)

Cod, Pacific (*Gadus macrocephalus*) (gray cod)
  C 1: 285 (feed, spawning)
  J 4: 367 (spoilage bacteria trimethylamine generation), 405 (liver & intestinal oils vitamins); **7**: 552 (peptones from flesh); **8**: 377 (dispersion & growth); **13**: 357, **15**: 625 (catches & catch per unit effort); **18**: 513 (ecology; correction on **21**: 1553); **19**: 169 (fat hydrolysis), 497 (fecundity); **20**: 1087 (fertilized eggs demersal quality); **21**: 9 (embryonic development & larvae), 1051 (growth & mortality)
  B 37: 148, **59, 89** (oils; *see* their indexes); **68**: 132, **68R**: 165 (full description); **139** (role in Strait of Georgia fishery)
  PRP 12: 3, **26**: 17, **36**: 22, **38**: 15, **54**: 4 (liver & intestine yields, their oil & vitamin A content); **37**: 7, **65**: 73 (smoked); **38**: 15 (liver & intestine oil vitamin D); **42**: 16 (taste panel on frozen); **45**: 19 (drip control); **56**: 7 (dehydrated); **59**: 15 (flesh quality tests); **67**: 13, **99**: 28, **103**: 8 (tagging & returns); **73**: 58 (wastes recovery); **79**: 35 (feed of); **84**: 64 (trawl fishery); **94**: 3 (brine freezing); **96**: 20 (unusual spoilage odour in hold); **102**: 10 (fishery trends); **105**: 19 (Na & K of flesh); **111**: 3 (effect of explosion on), 20 (landings for mink feed)
  CNG 33, 41 (Strait of Georgia catches, 1952–55); **62** (Hecate Strait tagging)
  CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
  CVI 7 (delicatessen products)
  S 13 (pentoses in); **290** (W coast Vancouver Is.); **434** (Na & K of flesh); **453** (B.C. fishery); **851**: 44 (B.C. fishery history & prospects)

Cod, pilot (*see also* Cod, Greenland)
  J 11: 248 (Strait of Belle Isle; reported as *Morrhua ductor*)

Cod, polar (*see* Cod, arctic)

Cod, red (*see* Snapper, red)

Cod, rock (*see* Rockfish species)

Cod, saffron (*Eleginus gracilis*)
  CNG 64: 56 (possible fishery potential)
  SS 1324 (arctic distribution & ecology)

Cod, salted (*see* Cod, Atlantic (salted))

Cod, tom (*see* Tomcod, Pacific)

Cod, "tommy" (*see* Greenling, white-spotted)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Cod worm (*see Phocanema decipiens*)

Codend (*see* International Commission for the Northwest Atlantic Fisheries; Mesh; Net; Nets; Trawl, otter)

Codium (red seaweeds)
B 127: Fig. 19 (*fragile* as B.C. resource)

Codworm (*see Phocanema decipiens*)

Coelenterata (*see also* Actina; Corals; Hydroids; Hydrozoa; Jellyfish; Sea-anemone; Siphonophora; etc.)
C 1902–05: 36 (list of N.B. & N.S.)

Coelorhynchus carminatus (*see* Grenadier, longnose)

Coho salmon (*see* Salmon, coho)

Cold, resistance to (*see* Lethal limits; Revival; Temperature, reactions to)

Cold clearing of oils (*see* Stearine)

Cold storage (*see* Refrigeration)

Coleoptera (*see* Insects)

Collagen (*see also* Gelatin)
J 17: 913 (in Pac. herring tissues)

Collectors for oyster spat (*see also* Oyster species)
B 22: 21, **48** (P.E.I.); **34**: 16 (B.C.); **60**: 20, **131** (Maritimes)

Collier, F. C.
SS 676 (mussel toxicity)

Collin, Arthur Edwin Hodgson
J 15: 1175 (Foxe Basin ice discoloration); **18**: 253 (polar continental shelf oceanography)
S 674 (Canadian & adjacent Arctic Ocean oceanography)

Collins, F. S.
SS 60 (Vancouver Is. marine algae)

Collins, Gerald Bradford
J 21: 255 (migrating salmonids glycogen & lactate)

Collins, Vernon Kirkpatrick
J 4: 412, **5**: 32, 197, 203 (fish spoilage mechanism & estimation)
PRA 23: 6 (trimethylamine in fish spoilage)

Collip, James Bertram
S 7 (marine molluscan respiration)
SS 191 (marine fish & molluscan CO_2 excretion); **192** (molluscan coelomic fluid); **243, 244** (insulin-like substances in clam tissue)

Cololabis saira (*see* Saury, Pacific)

Colorimetry
C 7: 119 (for seawater silicates)
J 2: 1 (for seawater nitrates); **6**: 351, **7**: 576 (for fish-spoilage trimethylamine); **6**: 414 (for nitrite preservative residues in flesh); **7**: 594 (for fish muscle protein)
PRC 2: 27 (for lampricide dilution by streams)
S 23, 25 (for urea & arginase); **189** (equipment & procedure for seawater analysis); **639** (for lampricide concentration in streams)

Colour (*see also* Pigment; for coloration of fishes, etc., *see* name of fish, etc.)
J 15: 1175 (of arctic ice)
SS 25 (of animals)

Combfish, longspine (*Zaniolepis latipinnis*) (long-spined greenling)
B 68: 236, **68R** (full description)

Comb-jelly (*see* Ctenophora)

Comeau, Napoléon A.
SS 111 (1914 Hudson Bay fisheries expedition)

Commensalism (*see also* Epizoism)
J 7: 219 (snail with clam)
S 5: 2 (haddock with medusa)
SS 214 (Strait of Georgia marine animals); **260** (echinoderm with annelid)

Commissions (*see* full name of commission, e.g. under International)

Competition, in populations
J 10: 211 (theory); **12**: 543 (between species); **13**: 327 (freshwater fishes); **15**: 27 (between native & planted trout; correction on **16**: 386); **18**: 203 (shiners with trout); **20**: 647 (interspecific, re exploitation)
B 65 (feed competition re salmons); **119** (*see* its index)
PRP 74: 6 (feed re salmons); **79**: 35 (feed re cods)

S 764 (sockeye in lakes)

SS 214 (Strait of Georgia); **479** (coarse fish re fish culture)

Composition, chemical (of fishes, their tissues, organs and products) (*see also* the accompanying other headings Composition, chemical) (These headings include proximate analyses and various other types of analyses. Additional references will be found under the heading Nutritive value. For content of *vitamins*, see Vitamin; Vitamins; for content and constituents of *oils, fats and lipids*, see Acids, fatty; Oils and fats; Lipids; Unsaponifiables; for constituent *amino acids* of proteins, see Acids, amino. *See also* other cognate subjects such as Analysis, methods of chemical; Carbohydrates; Feed studies; Foodstuffs; Mineral constituents; Proteins; Sugars; Variation, seasonal, in composition; *also* names of individual chemical elements and certain chemical compounds; names of species of organisms and their products)

C 1918–20: 125 (selachian muscle), 133 (canned Atl. dogfish); **3**: 437, 457 (re muscle rigor); **6**: 1 (haddock protein), 341 (Pac. dogfish flesh); **7**: 169 (glue from wastes); **8**: 123, 131 (haddock non-protein nitrogen)

J 1: 179 (cod, haddock, salmon, herring & skate non-protein nitrogen); **2**: 439, 469 (canned sockeye & pink salmon), 457, 469 (canned pilchard), 461, **17**: 603 (lingcod flesh); **2**: 463, 469, 473 (canned coho salmon); **3**: 177 (pilchard reduction effluent); **4**: 363 (mackerel & tuna histidine), 478, **16**: 679, **17**: 913 (B.C. herring); **6**: 303 (dehydrated fish), 338 (smoke constituents in smoked products); **7**: 51 (muscle proteins sulphur compounds), 608, **17**: 371, **18**: 321 (muscle phosphorus compounds); **8**: 164 (changes in chum & coho salmon fry), 314 (trimethylamine oxide); **12**: 641 (fish livers), 646 (sturgeon muscle); **13**: 130, 153 (American plaice normal vs. "jellied" flesh), 570, **15**: 698 (redfish fillets); **13**: 875 (dried viscera meals); **14**: 629, 926, **20**: 909, **21**: 703 (Atl. cod flesh & fillets: seasonal variations); **16**: 235, 421, 559, **17**: 113, 125, 347, 565 (various tissues of spawning migratory sockeye salmon; corrections on **16**: 930, **17**: 943, 944); **16**: 685 (condensed solubles), 791, **17**: 811 (urea & amines in dogfish flesh); **17**: 323 (blood & tissues of maturing coho salmon), 449 (Pac. salmon muscle nucleosides); **18**: 93, 113 (liquefied herring animal feed products), 483 (various sections of Atl. halibut flesh), 495 (mackerel, tuna & swordfish flesh), 851 (salt cod), 893 (Atl. ratfish, sturgeon, shad, herring, white sucker, spiny eel, cod, haddock, redfish & wolffish flesh); **19**: 39 (2 species of lake trout), 1039, **21**: 1489 (fish protein concentrate); **20**: 229 (B.C. whole herring meal), 1153 (red & white porbeagle flesh), 1183 (brine-frozen & thawed tuna)

B 35: 7 (pilchard stickwater); **37**, **59**, **89** (oil content of whole fish & their tissues, also composition of the oils; *see* their indexes)

PRA 40: 3 (protein & amino acids losses through leaching); **49**: 5 (Atl. cod liver residue after oil extraction); **59**: 6 (whole capelin); **67**: 29 (fish protein concentrate); **72**: 19 (salt cod pickle amino acids); **73**: 9 (skin protein hydrolysate)

PRP 16: 3 (canned sockeye & pink salmon); **19**: 20 (fresh lingcod, canned pilchard & coho salmon); **22**: 15 (chum salmon eggs: canned & meal); **37**: 17 (surf smelt, Pac. smelt, eulachon), 19 (B.C. herring & meal at different seasons); **41**: 8 (red vs. white flesh of chinook salmon), 17 (Ca & P in canned salmon bone); **53**: 9 (chart of, for various fishes & products); **57**: 11 (Ca & P in several smoked products); **69**: 66 (nitrogen composition of flesh & processing wastes hydrolysates); **75**: 48 (freshwater fishes & their components); **76**: 78 (freshwater fish meal); **92**: 3 (B.C. salt herring); **93**: 18 (tullibee meal); **94**: 23 (B.C. ratfish); **101**: 17 (Na & K in canned salmon & tuna), 29, **111**: 23 (B.C. herring condensed solubles); **104**: 16 (protein & breakdown products during salmon flesh proteolysis); **105**: 19 (Na & K in B.C. salmons, cod, halibut & herring); **114**: 19

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

(Na, K, Cl, sugars & P compounds in frozen tuna muscle)

CCG 5: 1 (freshwater whole, dressed, & filleted fishes)

CHN 15 (fish protein concentrate)

CVI 9, 12, 13 (freshwater fishes components)

S 17 (insulin); **22, 25, 82** (arginase); **38, 40, 52** (changes caused by death); **59** (dogfish blood); **63** (*p*H); **81** (creatine); **434** (Na & K in B.C. fishes); **520, 536, 537, 539, 573, 605** (spawning migratory sockeye salmon tissues & organs)

SS 1198 (non-protein N of spawning migratory sockeye salmon tissues); **1328** (fish protein concentrate); **1408** (Ceylon fishes)

Composition, chemical (of invertebrates) (*See also* under heading Composition, chemical (of fishes))

C 1902–05: 121 (medusae); **1921:** 125 (lobsters)

J 1: 179 (lobster non-protein N); **2:** 477 (B.C. oysters); **5:** 344 (B.C. canned crab, shrimp, clam); **6:** 152 (lobster P compounds), 183 (crystals in canned lobster); **8:** 314 (trimethylamine oxide); **9:** 164 (vitamin B_{12} in various species); **10:** 283 (lake plankton), 521 (lobster-shell chitin), 583 (crab-shell chitin); **13:** 48 (Atl. oyster); **14:** 46 (plankton; seston), 640 (lobster fats); **17:** 475 (India shrimps), 895 (trimethylamine oxide & betaine in lobster); **18:** 1001 (marine phytoplankters), 1017 (marine phytoplankter pigments); **20:** 1 (*Phocanema decipiens* parasite of Atl. cod), 729 (bacteria amino acids); **21:** 1035 (scallop muscle)

B 6: 4 (lobster); **89:** 38, 42 (zooplankton oils), 347 (crab viscera, starfish & sea cucumber oils); **122:** 19 (phytoplankton); **125:** 107 (marine plankton & particulate matter; 2nd edition in 1965)

PRP 20: 16, **23:** 18, **37:** 19, **53:** 9 (oysters); **53:** 9 (canned clam, crab, shrimp); **53:** 9, **55:** 13, **57:** 11 (clam nectar); **95:** 45 (clams vitamin B_{12}; **103:** 16 (shrimp waste solubles)

CVI 3 (B.C. canned shellfish); **17** (B vitamins in clams, mussels, shrimp, crab, oyster)

S 10, 14 (annelids); **186** (glycogen in oysters); **310** (littleneck clam vitamin B_{12}); **561** (oyster gastric shield); **609, 631, 682, 758, 858** (zooplankton & other suspended particulate animal matter in seawater)

Composition, chemical (of marine mammals) (*See also* note under heading Composition, chemical (of fishes))

J 12: 641 (whale, seal, beef & pork livers); **20:** 245 (whale blubber oil)

B 59, 89 (oil content & composition of various; *see* their indexes)

PRA 37: 9 (seal liver)

CVI 10 (re uses of whale products); **17** (whale flesh)

S 310 (whale vitamin B_{12}; **819** (blubber oil fatty acids)

Composition, chemical (of natural waters) (*see* Limnology; Nutrients; Oceanography; Pollution; Sea water)

Composition, chemical (of plants) (*See also* note under heading Composition, chemical (of fishes))

C 1911–14(I): 51, **1914–15:** 25, 169, **1:** 39, **2:** 503 (B.C. kelps, principally iodine content)

J 10: 283 (lake phytoplankton); **14:** 33 (phytoplankton)

PRP 64: 53 (agar & algin content of B.C. seaweeds); **95:** 45 (seaweed vitamin B_{12})

S 273, 274 (Irish moss carrageen)

SS 18 (inorganic, of protoplasm); **65** (bromine); **85, 107, 108** (B.C. seaweeds); **134** (seaweed potash & iodine); **333** (seaweeds); **609, 631, 758, 858** (phytoplankton & other suspended particulate plant matter in seawater); **787** (Irish moss)

Concentration by freezing

PRP 55: 13 (clam nectar)

Conchoecia alata (an ostracod)

J 21: 555 (subspecies)

Condition (*see also* Fatness)

J 5: 253, **6:** 449 (Atl. oysters); **13:** 157 ("jellied" vs. normal plaice flesh)

PRA 35: 11, **45:** 6, **68:** 3 (Atl. oysters)

S 579 (Atl. oysters)

Conductivity, of heat (*see* Heat; Insulation)

Conductivity, of liquids (*see also* Electricity; Electrofishing)

J 16: 381 (portable measuring bridge; correction on **16**: 930); **17**: 583 (re lamprey electrical shocking capacity)
PRC 2: 18 (re electrical barriers for lampreys)
SS 751 (cod flesh extracts)

Confidence limits
J 15: 19 (for population estimates)

Conger oceanicus (*see* Eel, American conger)

Connell, Robert
S 61 (Departure Bay, B.C., marine algae)

Connell, Walter Thomas
C 1902-05: 53 (bacterial decomposition of sawdust)

Connolly, Cornelius Joseph
C 1921: 113 (angler fish development); **1**: 335, **2**: 327 (early stages of crabs)
B 3 (angler fish life history)
S 94 (new parasitic copepod)

Connor, Anne Robertson (*see also* Robertson, Anne Cochrane)
J 19: 409 (glycogen, etc. changes in exercised trout); **21**: 255, 1539 (migrating salmonids glycogen & lactate)

Conservation (*see also* names of organisms and names of international commissions)
SS 638, 729 (general, B.C.); **658** (common goal for industry); **747, 748, 749** (wise use of fishery resources); **760** (report of research committee); **854** (Ont. freshwater fishes)

Continental Shelf (*see also* Grand Bank; Oceanography)
J 18: 253 (oceanography of polar)
SS 1023 (Canadian Atl.)

Contracaecum (*see* Nematoda, parasitic)

Contraction of liquids (*see* Expansion coefficient)

Control (*see* Algacides; Insecticides; Lampricides; Poisons for natural waters; Predators; Shellfish occasional toxicity)

Conversion factors
CJG 1 (salted weight to fresh gutted weight, etc., of fish)
B 125: 165 (oceanographic)
PRP 84: 51 (hydrometric for brines)

Cook, George Harvey
PRA 46: 6 (cooling rate of gutted fish in holds)

Cooke, Norman Edward
J 7: 522 (carbonyl enediol antioxidant); **8**: 117 (salmonid feed growth factor)
PRP 70: 18 (costs of salmon bile collection); **71**: 5 (fish wastes utilization); **74**: 26 (moisture determination reagent dispenser); **75**: 51 (fish pyloric caeca commercial enzymes); **77**: 112 (moisture determination methods comparison); **80**: 52 (hatchery trout ration growth factor), 47 (salmon offal separation economics)
CVI 10 (utilization of whales); **16** (salmon viscera by-products)
SS 924 (enzymic browning of fruits inhibitor)

Cooking of fishery products (*see also* Canning; Palatability; Recipes; Taste tests)
J 17: 1 (time & temperature for cod fillets); **21**: 577 (frozen cod fillets re palatability)
CVI 15 (effects on nutritive values)
S 440, 468 (effect on antibiotic residues in flesh)
SS 161 (Dungeness crab); **1265, 1346** (effects on nutritive values, etc.)

Cooling (*see also* Chilling; Ice; Icing; Refrigeration; Sea water, refrigerated; *also* other cognate headings)
C 6: 375 (muscle thermal properties)
PRP 22: 11, **26**: 12 (curves for fish); **35**: 18 (capacity of various forms of ice); **52**: 7 (canned fish under pressure); **91**: 10 (precooked fish before canning)
CHN 12 (accelerated, for green salt fish)
S 109 (rate of fish muscle); **427** (rate curves for fillets)

Coombs, John Allan
CPO 1961-7 (B.C. offshore oceanographic observations)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Coonfield, Benjamin Randolph
SS 703 (hagfish skin pigment)

Cooper, Arthur Reuben
C 1911–14(II): 177 (black bass cestode parasite)
SS 86, 87, 112, 124 (systematics & morphology of cestode & trematode fish parasites)

Cooper, Doreen Mary
S 651 (turkey reproductivity)

Cooper, Douglas LeBaron
J 3: 1 (preparing fillets for smoking), 100 (fish canning thermal data); **4:** 136 (salt fish moisture equilibrium)
PRA 12: 7, 10, **13:** 3, 5 (rapid drying & smoking of fillets); **15:** 12 (temperature function in canning); **19:** 7 (small smokehouse); **20:** 8, 10 (humidity role in drying)
CHO 25 (smoke producer); **26** (smokehouse)
S 135 (smoke velocity determination)
SS 534 (devising canning methods); **642** (salt fish storage & transport); **643** (new smokehouse type); **704, 742** (fish drying)

Coot, American (*Fulica americana americana)*
S 224 (feed at Swan L., B.C.)

Copeland, Gordon Grote
C 1906–10: 281 (Passamaquoddy Bay oceanography & oysters)

Copepoda, freshwater free-living (*see also* Copepoda, parasitic; Cyclopidae; Entomostraca; *also* other classifications)
C 1: 303 (Canadian distribution)
PRP 21: 14 (as trout feed); **70:** 10, **74:** 6, 9, **78:** 6 (in Skeena R. system lakes)
S 312 (new diaptomid species)
SS 569 (N.S.)

Copepoda, marine free-living (*see also* *Calanus*; Copepoda, parasitic; Entomostraca; Euphausiacea; Zooplankton; *also* other classifications)
C 1917–18: 249 (Canadian); **1:** 303 (Canadian distribution); **4:** 527 (Passamaquoddy Bay harpacicoids); **6:** 483 (Hudson Bay)
J 1: 1 (*Euchaeta japonica* life history); **3:** 12 (feeding on Pac. diatoms); **5:** 365 (light effect on, as herring feed); **11:** 240 (Belle Isle Strait); **12:** 858 (Ungava Bay); **14:** 165 (B.C. distribution factors); **16:** 474 (Igloolik region, N.W.T.); **17:** 434 (Quoddy region, N.B.)
B 15: 7 (as coho salmon feed)
PRP 103: 19 (distribution in B.C. inlets)
S 3 (arctic, in Passamaquoddy Bay); **79** (ultraviolet light effects on); **124** (importance as sockeye feed)
SS 164 (exuviation & variation); **182** (Gulf of St. Lawrence); **208** (economic history); **259** (re ecology); **335, 363, 396** (B.C.); **588** (*Oithona* in Bay of Fundy); **652** (light effect on *Acartia*)

Copepoda, parasitic (*see also Cyclops*; Parasites; Salmon-lice; Whale-lice)
C 1906–10: 85 (Departure Bay & new species); **1911–14(I):** 69, **5:** 423 (of Quoddy Region fishes); **1917–18:** 248 (E Canadian); **3:** 235 (on pike-perch gills); **6:** 215 (new species on B.C. ascidian), 453 (on Ont. whitefish)
J 2: 355 (*Argulus* on whitefish); **7:** 187 (of Great Bear L. trout), 505 (*Sarcotaces* in red snapper); **8:** 207 (of Great Slave L. fishes); **11:** 267 (in whale skin), 673 (of B.C. freshwater fishes), 816 (new species in N.B. mussel); **17:** 9 (*Sphyrion* on redfish); **18:** 441 (of Lac la Ronge, Sask., trout); **21:** 205 (*Mytilicola* in California mussel gut), 681 (*Lernaeopoda* on dogfish), 873 (*Caligus* new species on Pac. fishes)
CJG 2 (*Sphyrion* on redfish)
NRB 16: 39 (on Nfld. lobster)
S 2 (*Argulus* in Minas Basin); **94** (new species on N.B. crab); **430** (*Salmincola* on salmon heart); **497B** (*Sphyrion* on redfish)
SS 49 (*Herpyllobus* on polychaete); **193** (on fishes); **660** (new species to speckled trout)

Copes, Parzival
J 18: 259 (salmon eye measurements)

Copper compounds (*see also* Poisons, for natural waters)
J 12: 642 (in fish and mammalian liver); **16:** 7 (in Atl. coastal seawater); **20:** 229 (in B.C. whole herring meal); **21:** 17 (lethal concentration for young Atl. salmon)
B 125: 103 (determination in seawater; new edition in 1965)

PRA 22: 8 (oleate as wood preservative against shipworm); **49:** 5 (in cod liver residue meal); **52:** 28 (for inhibiting red halophilic bacteria); **60:** 3 (in salt as cause of staining salt fish)
PRP 25: 3 (gillnet preservatives); **107:** 13 (toxicity to shipworm & gribble)
CGR 10 (oleate as wood-borer deterrent)
CHN 7 (catalysing off-odour production in groundfish)
COF 1 (oleate as shipworm deterrent)
CSG 38, 42 (toxicity to river salmon)
S 744 (rancidity promoter in groundfish)

Copper Lake, N.S.
J 12: 618 (trout management)
PRA 42: 7 (speckled trout angling yield)

Coracidia (*see* Cestoda)

Corals
SS 115, 144 (W coast America)

Coregonids (*see also* Ciscoes; ***Prosopium*** species; Whitefish)
J 14: 599 (evolution, distribution); **18:** 679 (osteology, phylogeny)
B 82 (of Great Bear L., N.W.T.); **94:** 12 (arctic & subarctic distribution)
SS 758 (NW Canada)

Coregonus alpenae (*see* Cisco, longjaw)

Coregonus artedii (*see* Cisco)

Coregonus clupeaformis (*see* Whitefish, lake)

Coregonus coulteri (*see* Whitefish, pigmy)

Coregonus cylindraceus (*see* Whitefish, round)

Coregonus hoyi (*see* Bloater)

Coregonus kiyi (*see* Kiyi)

Coregonus nasus (*see* Whitefish, broad)

Coregonus nasus kennicotti (*see* Whitefish. Mackenzie)

Coregonus nelsonii (*see* Whitefish, lake)

Coregonus nigripinnis (*see* Cisco, blackfin)

Coregonus odonoghuei (*see* Whitefishes)

Coregonus pidschian (*see* Whitefish, humpback)

Coregonus reighardi (*see* Cisco, shortnose)

Coregonus sardinella (*see* Cisco, least)

Coregonus williamsoni (*see* Whitefish, mountain)

Cormack, Hazel Elizabeth
PRC 2: 36 (failure of ultrasonic effect to kill lampreys)

Cormorant, double-crested (***Phalacrocorax auritus***)
SS 1402 (Lake Manitoba)

Cornetfish (***Fistularia tabacaria***)
J 16: 508 (N.S. record as trumpetfish)
B 155: 175 (full description)

Cornick, John Walter
J 21: 1549 (lobster tolerance for fluoridated water & tank wood extracts)
CHN 17 (as above)

Cornish, George A.
C 1902–05: 75 (Canso, N.S., marine Polyzoa), 81 (Canso fishes); **1906–10:** 79 (Tignish, P.E.I., fishes)

Cornwall, Ira Edmond
C 2: 469 (B.C. barnacles); **3:** 501 (N Pac. whale barnacles); **5:** 213 (*Scalpellum columbianum* barnacle from Departure Bay)
J 1: 469, **10:** 76 (B.C. barnacles nervous system)
PF 10e (B.C. barnacles)
SS 245 (rock-borers & tide pools)

Coronation Gulf, N.W.T. (*see also* Oceanography, arctic)
J 13: 594 (oceanography)

Coronetfish (*see* Cornetfish)

Corrosion (*see also* Canning)
J 7: 101 (prevention in vessel disinfection), 116 (estimation in canned herring); **12:** 134 (of tagging wire on marine fishes)
PRP 59: 7 (prevention in vessel disinfection)

Corticosteroids; Cortisol; Cortisone (*see* Hormones)

Corynebacterium
PRP 96: 11 (indigenous to marine forms)

Corynosoma (*see* Acanthocephala, parasitic)

Coryphaena hippurus (*see* Dolphin (Atlantic))

Coryphaenoides acrolepis (*see* Rattail, roughscale)

Coryphaenoides cyclolepis (*see* Rattail, smoothscale)

Coryphaenoides filifera (*see* Rattail, filamented)

Coryphaenoides rupestris (*see* Grenadier, rock)

Coryphopterus nicholsii (*see* Goby, crested)

Coscinodiscus (*see* Diatoms; Plankton)

Cossaboom, William Donald Rutherford
PRA 73: 3 (obituary of)

Cottidae (*see also* Bullhead; Bullheads; Sculpins)
C 1906–10: 215 (new genus & species)
S 81 (muscle creatine content); **82** (arginase in tissues); **148** (Pac. salmon fry predator)

Cottunculus microps (*see* Sculpin, polar)

Cottunculus thompsoni (*see* Sculpin, pallid)

Cottus aleuticus (*see* Sculpin, Aleutian)

Cottus asper (*see* Sculpin, prickly (freshwater))

Cottus bairdi (*see* Muddler, northern)

Cottus cognatus (*see* Sculpin, slimy)

Cottus hubbsi (*see* Sculpin, Columbia)

Cottus rhotheus (*see* Sculpin, torrent)

Cottus ricei (*see* Sculpin, spoonhead)

Cottus spilotus (a sculpin)
C 8: 43 (Hudson Bay)

Couesius species (*see* ***Hybopsis*** species)

Coulthard, H. S.
C 4: 121 (marine mussel growth)

Cowan, Ian McTaggart
S 426 (B.C. inside coast fur seal records)
SS 672 (Peace R. district vertebrate fauna)

Cowichan Bay, B.C.
PRP 39: 9, **42**: 22, **54**: 6 (salmon angling); **46**: 14 (sudden salmon mortality)

Cowichan Lake and River, B.C.
J 5: 448 (trout); **6**: 133 (bottom fauna); **9**: 417 (limnobiology)
B 84 (game fishes)
PRP 22: 7, **36**: 12 (brown trout marking & spawning run); **46**: 20 (steelhead angling); **47**: 19, **51**: 8, 37; **62**: 14 (coho salmon marking, tagging & returns); **49**: 6 (coho in commercial catch)
SS 636, 891 (fishes); **670** (hatchery furunculosis)

Cowie, John James
B 19 (Introduction); **37** (Foreword)
PRA 34: 3 (obituary of)
PRP 54: 3 (obituary of)

Cox, Philip
C 1914–15: 73 (N.B. quahaug disease), 81 (Atl. herring disease), 115 (light effects on migrating eels); **1918–20**: 109 (Gulf of St. Lawrence fishes); **1921**: 149 (Hudson Bay sticklebacks); **1**: 1 (lumpfish study), 409 (N.S. halibut larvae)
B 2 (lumpfish study)
SS 246, 247 (sticklebacks)
J 5: (i) (obituary of)

Crab, Dungeness (*Cancer magister*)
C 1: 335 (early stages)
J 1: 191, **18**: 873 (growth & age); **5**: 344 (proximate composition of canned); **17**: 641 (maturity & breeding); **19**: 505 (choline metabolism)
B 30 (Vancouver Is. fishery); **62** (B.C. fishery, life history); **89**: 347 (viscera oil); **91** (Queen Charlotte Is. fishery); **126**: 27 (stowage in refrigerated seawater)
PRP 11: 18 (description); **22**: 21, **89**: 84, **109**: 16 (tagging & migration); **53**: 9 (nutritive value); **63**: 38 (paste); **71**: 5 (use for shell); **76**: 81 (Queen Charlotte

Is. fishery); **79:** 39 (ultraviolet light for shell fragment detection in products); **87:** 34 (canning); **94:** 16 (collapsible trap); **95:** 56 (cause of black shell spots); **99:** 3 (feed of); **106:** 6 (live storage); **107:** 22 (post-larval stages)
CNG 64: 50 (productive capacity)
CNS 11, 13 (B.C. trawl landings by areas, 1962–63)
CVI 3 (analysis of canned); **17** (thiamin & riboflavin)
S 76: 15, **133** (larvae & young); **142** (relative growth analysis); **389** (in trawl fishery); **453, 851:** 57 (B.C. fishery); **485** (abnormal appendages); **823** (deoxyribonucleic acids)
SS 121, 138, 161, 983 (life history); **519** (relative growth); **620** (rearing); **762** (behaviour)

Crab, green (*Carcinides maenas*)
PRA 63: 3 (Maritimes predatory invasion)
CSG 26 (description as clam enemy)

Crab, king (*Paralithodes camtschatica*)
J 19: 401 (B.C. occurrence, with *Lithodes aequispina*)
PRP 41: 22 (unusually large specimen)

Crab, sand (*Emerita analoga*)
J 16: 761 (first B.C. record)

Crabs (general) (*see also* *Cancer;* Decapoda)
C 1906–10 (list of B.C. Anomura & Brachyura); **2:** 327 (early stages of *Rhithropanopeus*); **7:** 335 (new *Paralithodes* species)
PRP 79: 35 (as cod feed); **95:** 35 (as dogfish feed)
CNG 64: 28 (Atl. productive capacity)*
AF 10m (description of Atl.)*
S 5 (*Cancer irroratus** & *C. borealis,** Bay of Fundy); **64** (small Vancouver Is. species); **76:** 15 (young & adults, B.C.); **133** (larvae of 4 B.C. species)
SS 150 (American grapsoid); **404, 433, 777** (B.C. brachyuran); **510** (*Ovalipes* occurrence); **547, 617** (culture methods); **763** (*Cancer* temperature & world geographical distribution)

Crabs, hermit (*see also* Crab, sand)
C 1906–10: 187 (list of B.C. Anomura)
J 21: 355 (*Pagurus* taxonomy)
S 169 (larval & adult stages, B.C.)
SS 235 (vision acuteness); **547** (culture methods)

Crago septemspinosus (*see* Shrimps, Atlantic)

Craig, Allison Maud
J 21: 773 (fur seal reproduction)

Craigie, Edward Horne
C 1914–15: 87 (hake age from scales), 145 (prospective N.B. oyster culture), 151 (Passamaquoddy Bay hydrography), 163, **1917–18:** 127 (Bay of Fundy hydrography); **3:** 489 (Canadian fishes sex ratio)
S 42 (olfactory sense in sockeye migration); **47, 53** (ratfish brain blood supply); **54** (weights of fish & their liver & gonads); **66** (dogfish central nervous system)

Crampton, Earle Wilcox
J 17: 81, 501 (effect of feeding *Triaenophorus* & *Phocanema* to pups)

Crangon munita (*see also* Shrimps (Pacific))
PRP 74: 13 (distinction from similar crustacea)

Crangon resima (a shrimp)
J 19: 1167 (range extension in NE Pac.)

Crangon vulgaris (*see* Shrimp, brown)

Cranium (*see also* Heads, products from)
S 870 (variations re harp seal populations distinction)

Crappie, black (*Pomoxis nigromaculatus*) (*P. sparoides*; calico bass)
J 11: 703 (parasites, B.C.); **14:** 655 (B.C. distribution)

***CSG 50**, issued in 1966, gives the following common names:
Cancer borealis = Jonah crab
Cancer irroratus = rock crab
Chionoecetes opilio = spider crab
Geryon quinquedens = deep sea red crab
Hyas araneus = toad crab
Lithodes maia = northern stone crab

S 144: 71 (Hatzic L., B.C.); **481** (Man.)
SS 486 (B.C.); **1208**: 55 (full description, B.C.)

Crappie, white (*Pomoxis annularis*)
B 119: 105 (population estimate by Lagler's method)

Crassostrea gigas (*see* Oyster, Pacific)

Crassostrea virginica (*see* Oyster, Atlantic)

Craw, Charlotte Helen
S 51 (skate spinal reflexes)

Crawford Lake, B.C.
J 16: 897 ("residual" sockeye)

Crayfishes
C 2: 149 (in Ont. streams)
PRP 74: 13 (*Astacus* identification)
S 39 (anal muscle rhythmic contractility)
SS 134 (proposed utilization); **145** (some Ont.)

Crean, Patrick Bernard
J 18: 833, 845 (light pickling & partial desalting of cod)
PRP 105: 6 (antibiotics for holding whale carcasses)

Creatine
C 6: 341 (in dogfish muscle, blood & urine)
J 17: 565 (in maturing sockeye tissues)
S 81 (in fish muscle & other tissues)

Crecy Lake, N.B.
J 8: 381 (limnology); **12**: 210 (fertilization; trout predator control); **17**: 677 (trout season & yield)
PRA 36: 6, **43**: 3 (trout angling yields; fertilization)
S 297, 341 (fertilization); **385** (creel census); **418** (eel barrier for); **459** (predator control improves trout angling); **763** (trout re bottom fauna)

Creel census (*see* Census, creel)

Creelman, Vera Marie
J 16: (spawning migratory sockeye nucleic acids; correction on **16**: 930); **17**: 371 (lingcod muscle P compounds), 449 (Pac. salmons muscle inosine), 603 (lingcod muscle free ribose)

Crevalle (*see* Jack, crevalle)

Crinoidea
C 1917–18: 235 (Canadian); **1**: 21 (Hudson & James bays)
J 3: 350 (Hudson Bay)
SS 202 (development)

Cristispira
S 771 (plankton toxic to, in clam)
SS 1206 (in crystalline style of clam)

Cristivomer namaycush (*see* Trout, lake)

Critical size (*see also* Size)
J 17: 199 (for chinook salmon)

Croaker, Atlantic (*Micropogon undulatus*)
CVI 17 (B vitamins)

Croaker, white (*Genyonemus lineatus*) (king-fish)
B 7: 20 (Langerhans islets tissue re insulin); **68**: 146, **68R**: 218 (full description)

Crop, standing
J 12: 543 (fishes in lakes)
B 122: 12, 39 (phytoplankton)
S 419 (P.E.I. brook trout); **469** (Ungava Bay plankton); **609** (proximate analysis of marine plankton); **623** (arctic marine infaunal benthos)

Crossman, Edwin John
J 13: 599 (maskinonge welfare in sanctuary population); **16**: 247 (trout & redside shiner movements), 269 (a predator–prey interaction); **19**: 979 (predator–prey relation in pikes)

Crowding
PRA 39: 11 (smelt eggs); **66**: 24 (lobsters)

Cruising speed (*see* Speed of swimming)

Crustacea (*see also* Amphipoda; Arthropoda; Cladocera; Cirripedia; Copepoda; Cumacea; Decapoda; Entomostraca; Euphausiacea; Isopoda; Macrura; Malacostrata; Mysidacea, etc.; *also* Crab; Crayfish; Gribble; Lobster; Shipworm; Shrimp; Woodborers; Zooplankton, etc.)
C 1906–10: 83 (a collection of, Passamaquoddy Bay); **1911–14(I)**: 39 (a new Caprellid); **1917–18**: 248 (E Canada); **1**: 132 (Quill Lakes, Sask.)

J 15: 1392 (as cod feed); **19:** 1105 (Greiner L., N.W.T.); **20:** 387 (resistance to high temperature & low oxygen)
PRP 83: 27 (as whale feed); **112:** 7 (as coho salmon feed)
S 517, 703 (sterols in); **623** (arctic)
SS 122 (in Pac. halibut stomachs); **125** (luminescence of); **157** (in Passamaquoddy Bay plankton); **421** (Nebaliacea)

Cryptacanthodes maculatus (*see* Wrymouth)

Cryptosaras couesi (*see* Angler, lesser deepsea)

Crystals in or on fishery products
J 6: 183 (magnesium ammonium phosphate (MAP) in canned lobster)
PRA 69: 28 (disodium hydrogen phosphate (DHP) on salt cod)
PRP 16: 3, **23:** 22, **55:** 12 (MAP occurrence in canned salmon)
CHO 24 (MAP in canned lobster)
MSP 4 (MAP in canned Pac. salmon & tuna)
S 523 (DHP on salt cod)

CTC (chlortetracycline) (*see* Antiobiotics)

Ctenophora (comb-jellies)
C 6: 13 (symbiosis of *Beroe* with a dinoflagellate)
J 11: 240 (Belle Isle Strait)
S 110 (effect of ultraviolet light on)

Cultch (*see* Oyster)

Culture, fish (*see also* Hatcheries; Management; Pond culture; Transplantation; *also* names of fishes and other cognate subjects)
SS 174, 630 (hatching salmon fry in gravel); **422** (aim of Canadian research on); **479** (re predators & coarse fish); **621** (sampling errors re weight of fish in ponds); **627, 628, 629, 661** (in Europe); **1339** (general)

Culture, invertebrates (*see also* Lobster; Oyster)
C 1911–14(II): 13 (mayflies); **1917–19:** 75 (mussels); **1918–20:** 63 (diatoms); **8:** 459 (marine bacteria)
J 7: 162, 430 (*Pseudomonas* bacteria), 552 (media from fish peptones for bacteria); **9:** 148 (*Flavobacterium*), 157 (media for halophilic bacteria); **10:** 62 (of fish intestinal flora); **18:** 1001, 1007 (of marine phytoplankters); **20:** 743 (in-vitro maturation of *Phocanema* nematode)
S 388, 432 (re marine bacteria growth); **644, 682** (phytoplankton in situ in plastic bag)
SS 547, 617 (Brachyura & Anomura); **620** (Dungeness crab); **623** (shrimp)

Culture, tissue
J 20: 243 (kidney tubules of winter flounder), 679 (explants from marine fish); **21:** 347 (wound healing in cod)

Cultus Lake, B.C.
C 2: 345, **5:** 3, 37, 55, **8:** 345 (sockeye salmon lake life & ecology)
J 2: 311, **11:** 988 (sockeye, general); **3:** 363, **9:** 204 (limnology & benthos); **3:** 450 (sockeye natural feed); **4:** 19, 33 (plankton), 151 (sockeye propagation), 184 (young sockeye mortality), 192 (kokanee & residual sockeye); **5:** 293, 315 (sockeye predators); **6:** 267 (size of young sockeye re population density); **7:** 88 (sea-run & landlocked sockeye); **10:** 293 (coho salmon); **11:** 339 (adult sockeye survival); **16:** 897 (source of kokanee)
B 53: 4 (salmon)
PRP 1: 9 (research sub-station); **2:** 3, **5:** 11, **25:** 18 (sockeye marking & returns); **6:** 8 (salmon hybridization); **9:** 3, **10:** 10 (pond feeding & retention); **14:** 5 (artificial spawning & fertilization); **16:** 10 (hatchery trough capacity); **18:** 3, **32:** 21, **36:** 20 (salmon predator control); **20:** 3 (marked pink salmon); **21:** 14 (plankton as feed); **32:** 15 (kokanee); **36:** 3 (young sockeye growth vs. squawfish)
S 200 (dragonflies); **208** (stoneflies); **295** (sockeye production)
SS 371 (sockeye research); **614** (marked sockeye returns)

Cumacea
C 1917–18: 252 (Canadian); **6:** 23 (Vancouver Is. region)

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S 587 (Minas Basin, N.S.); **623** (arctic)
SS 678 (W Arctic)

Cumberland Sound, Baffin Island (*see also* Oceanography, arctic)
J 15: 155 (physical oceanography)

Cunner (*Tautogolabrus adspersus*) (bergall; blue perch; nipper; perch; sea perch)
C 1902–05: 85 (N.S.), 91 (trematode parasite); **2**: 423 (natural history); **3**: 467 (muscle tensile strength re smoking); **4**: 431 (distribution & growth); **8**: 275, 291 (slime & intestinal bacteriology)
J 11: 254 (Belle Isle Strait); **16**: 512, 827 (record size, N.B.)
B 5: 5 (temperature effect on growth); **155**: 269 (full description)
S 234 (P.E.I.)
SS 153: 88 (scale growth)

"Curd" in canned products
PRP 16: 3, **20**: 8, **21**: 10, **33**: 10 (nature & occurrence in salmon); **81**: 83 (in oyster stew); **104**: 9 (re post-mortem age of salmon)
MSP 5 (nature of)

Curi, Stefica
S 455 (frozen vs. unfrozen sardines for canning)

Curing (*see* Dehydration; Drying; Marinating; Salt fish; Smoking; *also* names of fishes)

Currents, freshwater (*see also* Estuaries; Flow; Limnology)
J 9: 329 (Great Lakes)

Currents, marine (*see also* Drift; Flow; Gulf Stream; Japan Current; Oceanography; Tide; *also* other associated subjects)
C 1: 101, 353 (Bay of Fundy); **2**: 69 (Halifax harbour); **3**: 271 (W Vancouver Is.), 282 (W Graham Is., B.C.)
J 1: 133 (re stratification in tank models), 171, **2**: 141, **3**: 203, **5**: 169, **9**: 213, **10**: 97, **11**: 32, **12**: 335, **17**: 181, 377, 727, 743, **18**: 163, **19**: 895 (in Bay of Fundy region) & estuaries); **2**: 116 (Gulf of Maine); **3**: 43, 93, **9**: 42, **16**: 283 (Vancouver Is. W coastal); **4**: 491 (Margaree Harbour, N.S.); **5**: 398, **11**: 14, 23, 501, 799, **18**: 1027 (Juan de Fuca Strait); **6**: 460 (W Greenland); **7**: 1, **10**: 155, **15**: 78 (Scotian Shelf); **10**: 177 (Labrador coast), 564 (NE Japan); **11**: 23 (effect of wind on), 26 (prediction), 48 (Hecate Strait, B.C.), 198, **15**: 1171 (Belle Isle Strait); **11**: 229 (Esquiman Channel, Gulf of St. Lawrence), 431 (re appendicularians); **11**: 501, 799; **13**: 581, **15**: 1065, **21**: 1289 (Strait of Georgia), 853 (Seymour Narrows, B.C.); **12**: 20, 26, **15**: 851, **16**: 605, **21**: 397, 1227 (NE Pac.); **14**: 165 (as indicated by copepod distribution); **15**: 91 (effects on shipworm incidence), 1171 (atmospheric pressure effect on); **16**: 635, **18**: 907 (B.C. mainland inlets); **16**: 635 (measurement by drags); **19**: 895 (electromagnetic measurement); **20**: 119 (subarctic Pac.); **21**: 1289 (re kraft-mill effluent)
B 13 (re E coast ice); **18** (Belle Isle Strait); **34**: 13 (re B.C. oyster beds); **57**: 56 (Margaree Estuary, N.S.); **83**: 18 (Alberni Inlet, B.C.); **88**: 46 (arctic); **91**: 3 (off Queen Charlotte Is.); **134** (Atl. Ocean)
PRA 29: 3 (Scotian Shelf winter flooding)
PRP 22: 3 (general); **30**: 16, **107**: 28 (open Pac.); **32**: 13 (Pac. gradient); **34**: 13 (W coast Vancouver Is.); **84**: 70, **95**: 48, **108**: 7 (tidal); **97**: 12 (B.C. inlets); **103**: 23 (Hecate Strait); **110**: 6 (Osborne Bay); **108**: 15 (Triangle Is.); **114**: 13 (re pollution removal)
CPO 1964-2 (qualitative assessment, NE Pac.)
S 20, 56, 75, 345 (estuarial); **21** (re oceanic tides); **56, 75, 112, 376** (Strait of Georgia); **123** (B.C. fiords); **136, 139, 178, 201, 204, 210** (transgressions on Scotian Shelf); **174** (dynamic studies of Pac.); **211, 346** (Passamaquoddy Bay); **304, 361** (arctic & subarctic); **316** (Hudson Bay); **317** (Labrador Current); **358** (Sambro lightship); **454** (Ekman current meter use); **585, 585A, 586** (Queen Charlotte Sound & NE Pac.); **850**: 17 (subarctic Pac.)
SS 183 (effect on Atl. hydrodynamics); **200, 201** (Bay of Fundy & Gulf of Maine); **665** (meteorology re B.C. coastal); **1067** (arctic); **1167** (NE Pac.); **1316** (drifter for ascertaining deep); **1327** (dynamics)

Currents, reaction to electrical (*see* Electrofishing; Guiding; Lamprey, sea; *also* other cognate subjects)

Currents, reaction to water (*see also* Flow; Homing; Migration)
J 2: 89 (Atl. sea mussel)
J 4: 491 (speckled trout); **7**: 432 (Atl. salmon), 432, **12**: 238 (eels); **7**: 545 (quahaug & oyster, re growth); **8**: 241, **10**: 523, **11**: 69, **12**: 369, **13**: 309, **15**: 391, **17**: 655 (Pac. salmons); **11**: 550 (cutthroat trout); **14**: 165 (copepods as current indicators); **17**: 689 (Atl. herring)
B 34: 11 (oyster); **57**: 56, **99** (Atl. salmon); **114**, **117** (re guiding Pac. salmons)
S 298 (Atl. salmon)
SS 688 (stickleback in estuary); **853**, **912** (affecting Atl. salmon); **995** (re orientation & capture of sea fishes)

Currie, Mary E.
SS 164 (*Calanus* exuviation & variation)

Cushman, Joseph Augustine
C 1921: 133 (Hudson Bay Foraminifera)

Cusk (*Brosme brosme*) (brosmius, tusk)
C 1902–05: 91 (trematode parasite); **8**: 531 (plastic from muscle)
J 7: 96 (thiaminase in); **16**: 821 (Canadian Atl. distribution)
B 155: 191 (full description)
CHO 30 (canning chicken haddie from)
CNG 64: 18 (productive capacity)
CSG 2 (Atl. offshore landings, 1938–40)
CSS 1, 2, 3, 4, 5, 6 (N.S. landings, 1947–52)
NSB 8: 29 (life history)
SS 1386 (length frequencies)

Cuskpout (*Derepodichthys alepidotus*)
B 68: 197, **68R**: 392 (full description)

Cyanea capillata arctica (*see* Jellyfish)

Cycles (*see also* Fluctuations; Salmon; Salmons, Pacific)
PRA 43: 7 (in seawater temperature)
SS 919 (dominance in Fraser R. sockeye); **967** (Atl. salmon); **1399** (dominance in Adams R. sockeye)

Cyclone (*see* Storms)

Cyclopidae (*see also* Copepoda, freshwater)
B 95: 11 (*Cyclops bicuspidata* host to procercoid stage of *Triaenophorus*)
PRC 1: 31, **2**: 51 (*C. bicuspidata* re *Triaenophorus* life history)
PRP 21: 14 (as trout feed); **70**: 10, **74**: 6, 9, **78**: 6 (in Skeena R. system lakes)
S 591 (*Triaenophorus* infection of); **649** (*C. scutifer* in Lake Hazen, Ellesmere Is.)

Cyclops **species** (*see* Cyclopidae)

Cyclopterichthys ventricosus (*see* Lumpsucker, smooth)

Cyclopterus lumpus (*see* Lumpfish)

Cyclostomata
C 1917–18: 242 (Canadian)
J 11: 267 (on whale skin)

Cyclothone braueri (*see* Anglemouth, Brauer's)

Cyclothone microdon (*see* Anglemouth, veiled; Lanternfish, small-eyed (Atlantic))

Cymatogaster aggregata (*see* Seaperch, shiner)

Cynoscion nobilis (*see* Seabass, white)

Cynoscion regalis (*see* Weakfish)

Cyprina islandica (*see* Quahaug, ocean)

Cyprinidae (*see also* Carp; Chub; Dace; Shiner; Sucker, etc.)
B 94: 18 (Canadian arctic & subarctic)
S 448 (Man. northern limits)
SS 514 (pharyngeal teeth variation)

Cyprinus carpio (*see* Carp)

Cypselurus furcatus (*see* Flyingfish, spotfin)

Cypselurus heterurus (*see* Flyingfish, Atlantic)

Cystine (*see also* Acids, amino)
PRP 71: 5 (possible commercial production from scales)

Cystophora cristata (*see* Seal, hooded)

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Cystosiera geminata (*see* Japweed)

Cytology (*see also* Eggs)
J 18: 139 (marine phytoplankters cell division rate)
SS 162 (nerve & egg cells)

Czechoslovakia
SS 629 (fisheries biology & culture)

D

Dab (European) (*Platessa limanda*)
J 15: 573 (lethal hyperactivity)

Dab, long rough (*see* Plaice, American)

Dab, rusty (*see* Flounder, yellowtail)

Dabs (in addition to above, *see* Sanddab)

Dace, blacknose (*Rhinichthys atratulus*)
J 16: 147 (associations in Ont. streams), 817 (Miramichi R., N.B.)
S 445 (lethal temperature limits); **448** (Man. northern limit); **461** (response to electrofishing); **481** (Man.)

Dace, finescale (*Pfrille neogaeus*) (*Chrosomus neogaea; Phoxinus neogaea*)
J 16: 147 (associations in Ont. streams); 817 (Miramichi R., N.B.)
B 94: 18 (Mackenzie District)
S 448, 481 (Man.)
SS 1208: 116 (full description)

Dace, horned (*see* Chub, creek)

Dace, leopard (*Rhinichthys falcatus*) (*see also* Minnow, silver-gray)
J 10: 196 (upper temperature limit); **14**: 655 (B.C. distribution); **20**: 106 (sympatric species comparative ecology)
SS 1208: 125 (full description)

Dace, longnose (*Rhinichthys cataractae*)
C 1911–14 (II): 20 (Lake Huron)
J 11: 693 (parasites); **12**: 499 (Skeena R. system lakes); **13**: 772, **14**: 656 (B.C. distribution); **16**: 147 (associations in Ont. streams); **20**: 105 (sympatric species comparative ecology)
B 56: 37 (Okanagan L., B.C.); **94**: 18 (Canadian distribution)
PRP 78: 6 (re Babine L. salmon)
S 144: 69 (B.C. distribution); **357** (Lake Winnipeg region); **448, 481** (Man.)
SS 1208: 127 (full description)

Dace, northern pearl (*Margariscus margarita nachtriebi*) (*northern minnow*)
J 13: 768, **14**: 657 (B.C. distribution); **16**: 147 (associations in Ont. streams), 817 (Miramichi R., N.B.)
S 448, 481 (Man.)
SS 1208: 110 (full description)

Dace, northern redbelly (*Chrosomus eos*)
J 12: 499, **13**: 769, **14**: 657 (B.C. distribution; correction on **12**: 942); **16**: 147 (associations in Ont. streams), 817 (Miramichi R., N.B.)
S 144: 68 (Peace R. region lake); **481** (Man.)
SS 1208: 114 (full description)

Dace, redside (*Clinostomus elongatus*)
J 16: 147 (associations in Ont. streams)

Dace, southern redbelly (*Chrosomus erythrogaster*)
S 144: 68 (in Peace R. region lake; possibly northern redbelly dace)

Dace, speckled (*Rhinichthys osculus*)
J 14: 654 (B.C. distribution)
SS 1208: 123 (full description)

Dacnitis truttae (*see* Nematoda)

Dactylopterus volitans (*see* Gurnard, flying)

Dahlgren, Elric
SS 125 (luminescent worms, crustacea, insects)

Daggertooth (*Anotopterus pharao*) (lesser lancetfish)
J 16: 383 (record off B.C.)
B 68R: 155 (full description, Pac.); **155**: 151 (full description, Atl.)
PRP 113: 10 (B.C. occurrences; feed)

Dale, Jacqueline
J 16: 13 (*Pseudomonas* odour production on fish), 223 (landed quality variations in cod & haddock)
B 138 (antibiotic preservative dip for fillets)
S 744 (metal-induced rancidity)

Dallia pectoralis (*see* Blackfish, Alaska)

Damalichthys vacca (*see* Seaperch, pile)

Dambergs, Nikolajs
J 13: 791 (extraction & estimation of fish products fat); **16:** 63 (extraction of fat & water-solubles from fish muscle); **20:** 909, **21:** 703 (fish muscle extractives)
CHN 8 (metal-catalyzed rancid odours)
S 744 (metal-induced rancidity)

Dams (*see also* Migration; Obstructions to fish migration)
SS 1112 (proposed by U.S.S.R. for rivers & Bering Strait)

Dannevig, Alf
SS 179 (Canadian Fisheries Expedition fish eggs & larvae)

Daphnia (*see* Cladocera)

Darter, blackside (*Percina maculata*) (*Hadropterus maculatus*)
J 16: 147 (associations in Ont. streams)
S 481 (Man.)

Darter, channel (*Percina copelandi*)
J 16: 147 (associations in Ont. streams)

Darter, fantail (*Etheostoma flabellare*)
J 16: 147 (associations in Ont. streams)

Darter, greenside (*Etheostoma blennioides*)
J 16: 147 (associations in Ont. streams)

Darter, Iowa (*Etheostoma exile*) (*Poecilichthys exilis*)
C 1911-14(II): 48 (Lake Huron)
J 16: 147 (associations in Ont. streams)
S 357, 481 (Man.)

Darter, Johnny (*Etheostoma nigrum*) (*Boleosoma nigrum*)
C 1911-14(II): 48 (Lake Huron)
J 15: 214 (Heming L., Man.); **16:** 147 (associations in Ont. streams)
S 481 (Man.)

Darter, least (*Etheostoma microperca*)
J 16: 147 (associations in Ont. streams)

Darter, rainbow (*Etheostoma caeruleum*)
J 16: 147 (associations in Ont. streams)

Darter, river (*Percina shumardi*) (*Imostoma shumardi*)
S 357, 481 (Man.)

Das, Nareshwar
J 19: 981 (young captive herring feeding & growth)

Dasyatis centroura (*see* Stingray, roughtail)

Dasyatis dipterurus (*see* Stingray, diamond)

Dasycottus setiger (*see* Sculpin, spinyhead)

Dauphinee, James Arnold
S 23 (urea and arginase colorimetry); **25** (arginase distribution in fish, etc.)

Davidson, Frederick Alexander
S 257 (pink salmon upstream migration)

Davidson, Viola May
C 2: 295 (Canadian Atl. Ostracoda distribution); **6:** 495 (Hudson Bay planktonic diatoms); **8:** 357 (Passamaquoddy region planktonic diatoms)
J 7: 432 (salmon & eel movements in currents)
S 32 (diatom maximum causation); **121** (silica re plankton growth)

Davis Strait (*see also* Oceanography, arctic)
S 441 (Greenland researches)

Dawson, W. Bell
SS 141 (slack water re tides)

Day, Charles Godfrey
J 14: 931 (transponding drift buoys)

Day, Lewis Rodman
J 16: 503 (unusual Canadian Atl. fishes; correction on **16:** 930); **20:** 347 (*Salvelinus fontinalis* opercular apparatus)
B 111: 35, 103, 121 (Canadian Atl. herring populations), 165 (first-year growth of herring re temperatures); **130** (NW Atl. swordfish biology & fishery; correction on **J 21:** 1554)
CSG 13 (eel fishing); **15** (description of smelt, capelin & silverside); **19** (description of herring, alewife & shad)

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S 717 (redfish larvae summer surface distribution); **726** (Atl. hagfish blood corticosteroids)
SS 935 (bluefin fishery); **1017** (white shark); **1267** (Passamaquoddy fishery investigations)

DDT (*see* Insecticides)

Deas, Catherine Pearson
J 7: 221 (bactericides for fish flesh), 513, 563 (fishery products amino acids), 552 (peptones from fish flesh)
PRP 69: 66 (fish products protein food values); **73**: 50, **77**: 97 (fishery products amino acids); **75**: 43 (bacteriological peptones from flesh)
CVI 11 (fishery products amino acids)

Decapoda (*see also* Crabs; Crayfish; Lobsters; Shrimps, etc.)
C 1906–10: 187 (list of 129 B.C. forms); **1917–18**: 253 (Canadian); **2**: 99 (upper temperature tolerance)
J 19: 677 (Frobisher Bay), 1167 (NE Pac. caridean shrimps); **21**: 355 (*Pagurus* taxonomy), 461 (*Argis* subspecies comparison), 971 (*Pasiphaea pacifica* as host of *Holophryxus alaskensis*)
AF 10m (Atl. classification)
NRB 3: 11 (Nfld. larvae)
S 64 (distribution off Sydney, B.C.); **482** (Ungava Bay); **587** (Minas Basin, N.S.); **635** (new B.C. records)
SS 376, 708 (SE & W Vancouver Is., & Queen Charlotte Is. coastal); **678** (W arctic)

Decapterus macarellus (*see* Scad, mackerel)

Decapterus polyaspis (*see* Mackereljack)

Dechlorination
J 17: 601 (of water for aquarium)

Decolorization (of oils) (*see also* Pigment)
C 7: 413 (pilchard)
J 7: 471 (seal)
B 59, 89 (marine animal oils; see their indexes)
PRP 11: 5 (herring & pilchard)

Deflecting of migrating fish (*see* Guiding; Migration)

Deformity (*see* Abnormalities)

Defrosting (*see also* Thawing)
PRP 51: 12 (of refrigerator systems)

Dehydration (*see also* Drying; Glazes)
C 8: 475 (during cold storage)
J 6: 303 (moisture, microorganisms & volatile bases in dehydrated fish)
PRP 5: 7, **8**: 3, **11**: 7, **14**: 12, **15**: 11, **24**: 18, **26**: 12, **32**: 9, **43**: 3, **45**: 7, **67**: 27, **68**: 52, **70**: 5, **74**: 3, **89**: 76, **93**: 10 (desiccation during cold storage & its prevention); **56**: 4, 7, **57**: 16 (dehydration & dehydrated fish products); **83**: 28 (freeze-dried whale liver; correction on **84**: 50)
CVI 15 (effects on nutritive factors)
CVG 23 (plastic film packaging to avoid)
S 672 (review of recent advances); **742** (problems)
SS 788 (new Canadian methods)

DeLacy, Allan Clark
PRP 58: 8 (pink salmon tagging)
B 66, 74 (1943, 1945 pink salmon migrations)

Delicatessen products (*see also* Canning; Marinating; Smoking; Spiced products)
PRA 39: 14 (kipper snacks)
PRP 42: 10 (from chum salmon); **63**: 38 (pastes), 41 (from anchovy); **72**: 33 (from herring); **73**: 58 (fish loaf & fish cakes); **86**: 16 (canned fried fish cake)
CCG 4: 10 (from various freshwater fishes)
CFI 6 (kipper snacks)
CVI 5 (from salmon); **7** (from salmon & lingcod)
SS 1292, 1334, 1345 (freshwater fish wieners, patties, etc.)

Delolepis gigantea (*see* Wrymouth, giant)

Delphinapterus leucas (*see* Beluga)

Delphinus bairdi (*see* Dolphin, Baird's)

Delphinus delphis (*see* Dolphin, common)

DeLury, Daniel Bertrand
J 8: 281, **15**: 19 (mathematics of fish population estimates)

Denaturation of proteins (*see also* Drip; Proteins)
C 8: 311 (by freezing)

J 5: 411 (*p*H & salt effects); **7**: 599 (by freezing); **8**: 325, **9**: 392 (by salt or brines); **13**: 129, 569, **14**: 627, 926 (during freezing of plaice, redfish, cod, fillets)
PRP 17: 5 (due to improper freezing); **33**: 13, 17 (in iced or frozen halibut); **71**: 15 (cause & control)
S 324 (by freezing)
SS 426 (in muscle juice); **1019** (re processing problems)

Deno, Sherman Edward
PRP 26: 3 (black vs. white ponds for fish culture)

Density of natural waters (References to this subject are too numerous to list separately; data will be found in a great many of the references under Oceanography, *also* some under Limnology)

Density of oils and fish (*see* Specific gravity)

Denstedt, Orville Frederick
C 6: 365 (oil drying rate tests); **8**: 321 (pilchard oil bodying)
J 1: 487 (pilchard oil oxidation rates); **2**: 13 (pilchard oil films)
PRP 4: 6 (pilchard oil drying properties); **10**: 17, **24**: 3 (pilchard oil paint films); **21**: 10 (curd in canned salmon)
B 37 (marine animal oils chemistry & technology)
S 97 (pilchard oil vitamin D)

Deodorization (*see also* Odour)
J 8: 189 (of seal oil)
B 59, 89 (of marine animal oils; *see* their indexes)

Deoxyribonucleic acid (DNA) (*see* Acids, nucleic)

Departure Bay, B.C. (The following are references to only some of the Board's own publications of early investigations and collections made at or near this site of the Board's Pacific Biological Station; references to later work will be found under various topical headings, e.g. Georgia; Strait of; Oceanography, Pacific (NE coastal waters); Station, Board Biological, Departure Bay; *also* under names of organisms)
C 1906–10: 85 (parasitic copepods), 215 (new cottid), 295 (geology); **1911–14(I)**: 51 (iodine content of flora & fauna); **1918–20**: 29 (effect of weather on marine organisms), 35 (oceanography); **1**: 81 (phytoplankton), 203, **2**: 285, **3**: 405, **4**: 305, **6**: 65 (annelids); **1**: 455 (starfish); **3**: 13 (isopods), 317 (ophiurans); **4**: 19 (*Bankia*); **5**: 213 (barnacle)
J 2: 335 (endoparasitic trematodes); **10**: 85 (polychaete)
B 17: 3 (birds & herring)

Depletion (*see also* other cognate headings; e.g. Stock)
C 1901: 59 (Atl. herring); **2**: 137 (trout); **5**: 3 (sockeye salmon)
J 6: 483 (sockeye); **10**: 1 (Atl. herring)
CNG 11, 22 (of B.C. pilchard fishery)
S 266 (fisheries)

Depth determining device (*see also* Echo sounding)
SS 1147 (telemeter for midwater trawls)

Depth of natural waters (for lakes, *see* Lakes, general; Limnology; for marine, *see* Inlet and fiord oceanography, *also* Oceanography headings; for river water, *see* Flow; *see also* names of specific bodies of water)

Depth distribution (*see* Distribution; Distribution, depth; Light, reactions to)

Derback, Bernard
SS 826 (whitefish industry); **827** (cold weather deters pickerel reproduction)

Derepodichthys alepidotus (*see* Cuskpout)

Derris (*see* Poisons, for natural waters)

Descaling equipment
PRP 77: 114, **78**: 16 (mechanized drum)
CFI 8 (home-made, for herring)

Desiccation (*see* Dehydration; Drying (of fish))

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

DeSilva, N.
SS 1109 (*Salvinia* for fish preservation in Ceylon); **1114** (salting & drying Ceylon fish)

Desmids (*see* Algae, freshwater)

Detector, tag (*see* Tag recovery devices)

Detritus (*see also* Pollution; Sediments; Silt)
J 10: 283 (lake plankton mineralization); **18:** 51 (in Hudson Bay waters)
S 609, 631, 758, 858 (distribution, quantity & proximate analysis of suspended marine, re feed source)

Detweiler, John Detweiler
C 1911–14(I): 43 (Passamaquoddy Bay molluscs); **1914–15:** 145 (prospective oyster culture); **1917–18:** 75 (Ont. freshwater pearly mussels)

Development (*see* Embryology and development; Growth; Larvae; Maturity; Reproduction

Devil, red (*see* Red Devil)

Devilfish (*see* Manta, Atlantic; Octopus)

Devil's apron (*Laminaria bullata*)
CNG 44: 13 (used by spawning herring)

Devil's club (*Oplopanax horridum*) (*Fatsia horrida*)
SS 653 (hypoglycaemic substance from roots)

Diabetes (*see* Devil's club; Insulin; Islets of Langerhans)

Diaphus rafinesquii, D. theta (*see* Lanternfish, theta)

Diatomaceous earth
SS 46 (N.B.)

Diatoms (The following references are not exhaustive; *see also* Algae; Feed studies; Photosynthesis; Plankton; *also* other cognate subjects including names of bodies of water)
C 1902–05: 6, 55 (E N.S. marine); **1906–10:** 243, 265, **1911–14(I):** 1, 11, **1918–20:** 49, 63, **8:** 357 (Bay of Fundy region); **1915–16:** 11 (as lobster feed); **1918–20:** 115 (Canadian); **1921:** 155 (Sask. & Alta.); **1:** 81 (Departure Bay, B.C. re seawater density), 135 (Quill Lakes, Sask.); **2:** 31 (Canadian); **4:** 343 (Jasper Park lakes; **5:** 400 (Man. lakes); **6:** 495 (Hudson Bay); **7:** 249 (list of, as B.C. herring feed)
J 1: 357 (Bay of Fundy & Gulf of Maine); **3:** 12 (copepod & fish feed); **7:** 490 (re shellfish toxicity); **14:** 521 (Strait of Georgia); **18:** 1001 (chemical composition), 1017 (pigments of); **19:** 501 (*Melosira* periodicity in Great Slave L.); **21:** 747, 1379 (*Skeletonema costatum* fatty acids)
PRP 4: 3 (growth rate); **11:** 24 (as pilchard feed)
S 32 (cause of maxima); **56, 75** (re Fraser R. estuary biohydrography); **121** (silica & growth); **277, 279** (re green gills in bivalves); **690** (*Coscinodiscus* infection by *Lagenidium* fungus); **752** (lingcod mortality from spines in gills); **814** (chlorophylls of); **858** (composition)
SS 34 (N.B. marine & estuarine); **46, 47** (N.B. freshwater forms & diatomaceous earths); **84** (N.B. & P.E.I.); **123** (E Vancouver Is. coast); **237** (diatoms–fish marine feed cycle); **347, 349** (in open sea & chemical composition)

Dibranchus atlanticus (*see* Batfish, Atlantic)

Dickie, Lloyd Merlin
J 11: 660 (Atl. scallop growth rate); **12:** 187 (isopleth diagrams to predict fishery yields; correction on **12:** 942), 797 (scallop abundance fluctuations); **15:** 1189 (temperature re scallop survival)
B 115 (bloodworm biology & fishery)
PRA 49: 14, **54:** 12 (Digby scallop fishery); **63:** 3 (green crab as clam predator); **66:** 3 (mechanized shellfish digger); **70:** 31 (E Canada scallop fishery)
CSG 25, 30 (scallop explorations); **26** (green crab predation)
S 812 (fishery regulations effects on fish catch); **853** (tagging re Atl. cod mortality rates estimation)
SS 1061 (Maritimes clam problem); **1110** (mechanical shellfish digger); **1111, 1210** (scallop fishery re environment)

Diehl, William Webster
SS 501, 502 (a new *Ophiobolus* on eel grass)

Diets, artificial (*see also* Feed studies)
J 16: 321, **19**: 365 (effect on trout physiology)
S 864 (animal retention of dietary fatty acid pattern)

Digby County, N.S.
C 1901: 59 (sardines); **1914–15**: 41 (lobster-hatching ponds)
J 11: 660 (scallops), 963 (flounders); **12**: 797 (giant scallop)
PRA 44: 6, **49**: 14, **54**: 12 (scallops)
S 15 (mussels)

Digestibility (*see also* Feed studies; Nutritive value; Physiology, digestion; Ruminant livestock feed)
C 4: 317 (haddock muscle); **7**: 57 (haddock flesh & skin; beef)
J 7: 35 (fish flesh proteins)
PRA 2: 3, **8**: 10 (stimulation by fish & lobster flesh); **10**: 8 (fish meal), 9 (fish flesh)
CVG 26 (B.C. whole herring meal)

Digestive tract (*see also* Digestibility; Bile; Leather; Physiology, digestion; Pyloric caeca)
J 16: 421, **17**: 113, 347, 565 (biochemistry of maturing sockeye; corrections on **17**: 943, 944)
PRP 80: 47, 52 (of fish, re growth factor for trout feed)
CVI 9 (proportion of & oil yield in lake herring); **16** (re salmon by-products)

Digger, mechanical for shellfish (*see* Dredge)

Digging, sampling and commercial (by hand) (for clams, *see* Clam species; Clams; *see also* Bloodworm; Sandworm)

Dilution effect of rivers on seawater (*see also* Estuaries; Flow; Oceanography)
J 4: 424, **17**: 377 (St. John Harbour, N.B.); **13**: 273, **14**: 490, 605, **18**: 907, **19**: 921 (B.C. inlets); **13**: 393 (Chatham Sound, B.C.), 713 (Hebron Fjord, Labrador); **14**: 269, 342, 440 (Strait of Georgia, also precipitation effect); **15**: 91 (re shipworm incidence), 1097 (Fraser R.); **18**: 311 (surface waters of B.C. & Washington coasts), 1027 (Juan de Fuca Strait)
PRP 4: 3, **83**: 42 (Strait of Georgia); **76**: 66 (re Alberni Inlet pulpmill pollution), 72 (Nass & Skeena rivers effect on Chatham Sound); **87**: 32 (re herring spawning); **90**: 16 (B.C. coastal waters by rivers & rain); **112**: 10 (re shellfish toxicity)

Dimethylamine (*see also* Amines; Spoilage; Trimethylamine)
J 5: 32, **6**: 359 (production in spoilage)
PRA 27: 10 (as spoilage test)
S 456 (not formed from trimethylamine oxide in flesh)

Dimorphism, sexual
J 3: 417 (Pac. capelin vertebral number); **6**: 228 (lobster)
PRP 40: 17 (eulachon)

Dingle, John Reginald
J 12: 75, **15**: 135, **16**: 53, 243 (Atl. cod protein fractionation); **12**: 646 (Atl. sturgeon protein albumin); **19**: 591 (haddock muscle protein fractionation)
PRA 53: 8 (light-salted cod moisture curves); **69**: 28 (sodium phosphate crystals on salt cod)
S 523 (sodium phosphate crystals on salt fish); **633** (cod myosin & actomyosin enzyme activity); **801** (myosin-B extracts sedimentation patterns)
SS 1287 (freezing effects on proteins)

Dinoflagellates (*see also* Shellfish occasional toxicity)
C 7: 250 (list of, as B.C. herring feed)
J 18: 51 (Hudson Bay), 592 (Foxe Basin, including 3 new species); **20**: 983 (seasonal changes & abundance, Head Harbour, N.B.)
PRP 11: 24 (is pilchard feed)
S 76 (B.C.); **549** (*Prorocentrum* morphodynamics, protoplasm, taxonomy); **550** (new *Wolosynskia* species); **798** (morphogenetic factors re taxonomy)
SS 517, 578 (N American freshwater)

Dinophyceae
J 18: 1001, 1007 (chemical composition & pigments)

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Diogenichthys atlanticus (a lanternfish)
J 18: 307 (NE Pac. distribution)

Diphyllobothrium (*see* Cestoda)

Dips, preservative (*see also* Antibiotics; Fillets; Preservatives)
PRP 71: 15 (for fillets); **84**: 51 (preparation & use); **87**: 34 (for crab meat)

Directmus argenteus (*see* Spinyfin)

Directors (of Board Stations) (*see also* the Annual Reports of the Board)
J 15: 759 (Biological Station, Nanaimo, B.C.), 1155 (Biological Station, St. Andrews, N.B.)

Discards of fish at sea
J 20: 479 (cod, plaice, etc.)
PRA 69: 33 (groundfish re mesh size regulations)
CSG 37 (Atl. cod)
CJG 2, 3, 4, 5 (Nfld. groundfish)
CNS 11, 13 (of B.C. trawl fish)
S 497F (Atl. cod)
SS 1413 (in Nfld. commercial fishery)

Discharge rate of streams and rivers (*see* Flow)

Discoloration (*see also* Browning; Cod, Atlantic (salted); "Dun"; Herring, salt; Pigment; "Reddening")
C 7: 139, 425 (of halibut by yellowing bacteria)
J 15: 1175 (of arctic ice)
B 8 (canned lobster); **9**: 16, **112** (salted & dried fish); **12, 29, 49** (halibut skin by yellowing bacteria)
PRA 6: 12, **22**: 7 (halibut skin); **40**: 7 (of skin by chlorinated water); **45**: 14, **60**: 3 (from impure salt)
PRP 5: 7, **6**: 3, **7**: 3, **11**: 14, **27**: 11 (yellowing of halibut skin & "rusting" of cold stored salmon); **41**: 15 (nitrite preservative causing yellowing of halibut skin); **87**: 34 (crab meat); **95**: 56 (black, on crab shell)
CHN 2 (yellow, of frozen lobster meat)
NSB 4 ("pink" of salted & other products)
S 102 (fresh, frozen & smoked fish); **156** (chemical & microbiological); **499** ("blackening" of shrimp)
SS 229 (salt cod); **249** (canned lobster)

Disease (of fish) (*see also* Bacteria: in disease; "Chalkiness"; Fungi; Furunculosis; "Jellied"; "Milky"; Parasites)
C 1914–15: 81 (Neosporidia in Atl. herring); **1917–18**: 149 (*B. salmonicida* in Atl. hatchery salmon), 169 (*Saprolegnia* fungus in Atl. hatchery salmon); **2**: 129 (of skate thyroid); **8**: 161 (dracontiasis)
J 18: 559 (pink salmon kidney); **20**: 435 (fungus epizootic of herring)
PRP 48: 3 (young pilchards); **52**: 11 (young herring)
CNG 18 (possible cause of herring mortality)
S 108 (winter flounder "dizzy disease"); 243 (salmon fingerlings enteritis); **311** (control by poisons)
SS 654 (control for Atl. salmon & trout); **670** (ichthyophthiriosis); **1039** (hatchery trout ulcer)

Disease (of invertebrates) (*see also* Bacteria: in disease)
C 1914–15: 73 (supposed, of quahaugs); **1917–18**: 217 (bacterial of *Calanus*)
J 3: 358 (chitinivorous bacteria on lobsters)
B 22: 12 (P.E.I. oysters); **131**: 93 (Atl. oysters)
PRA 29: 15 (resistant oysters); **45**: 3 (scallops); **65**: 3 (oysters)
CHN 9 (*Gaffkaemia* in lobsters)
CSG 27, 28, 29, 31, 34 (Maritimes oysters)
NRB 16: 38 (lobsters)
S 283, 648 (P.E.I. oysters)

Disease (of man)
B 60: 78 (from contaminated oysters); **72**: 79, 82 (*Diphyllobothrium* tapeworm from fish); **75** (poison from shellfish)
CHN 14 (botulism)

Disease (of plants)
PRA 5: 11 (Atl. eel-grass)

Disinfectants and disinfecting (*see also* Bacteria; Chlorination; Ice (for fishery products); Formaldehyde; Holds; Poisons; Preservatives)
C 7: 139 (against halibut-yellowing bacteria)
J 6: 17 (against salt-fish reddening bacteria); **6**: 257, **7**: 101 (general)

B 49 (spray for vessel holds); **100**: 14 (for fish on vessels); **112**: 34 (fish plant & equipment)

PRP 6: 3, **59**: 7, **62**: 12 (sprays for vessel decks & holds)

CFI 22 (plant sanitation)

SS 445, 526 (vessel holds); **691** (handling & stowage of fish)

Disko Bugt, Greenland

S 623 (infaunal benthos)

Dispersal (*see* Distribution; Migration)

Distillation, molecular

B 89 (of marine animal oil derivatives; *see* its index)

PRP 93: 3 (fatty acids & esters; apparatus); **94**: 24 (herring oil fatty acids); **99**: 6 (salmon offal oil fatty acids)

Distribution, age (*see* Age)

Distribution, depth (*see also* Limnology; Oceanography)

C 1917–18: 229 (marine invertebrates); **1918–20**: 49 (diatoms); **1**: 415 (re fish body temperature); **6**: 241 (haddock), 485 (copepods)

J 14: 703 (squid off Nfld.), 899 (Gulf of St. Lawrence redfish); **15**: 607 (lake fish in summer); **17**: 517 (*Mysis*), 699 (Atl. herring); **18**: 1 (Pac. zooplankton), 423 (Lac la Ronge trout), 513 (Pac. cod), 563 (arctic phytoplankton); **19**: 299 (NE Pac. fishes & plankton); **21**: 891 (Gulf of Alaska salmons)

B 56: 49 (whitefish); **120** (redfish)

PRP 103: 19, **107**: 3 (plankton in inlets)

NRB 16: 60 (lobster larvae)

S 6: 2 (*Sagitta*); **44**: 60 (wood-borers); **48** (re algae growth rate); **764** (sockeye in lake); **769** (W Gulf of Alaska salmons)

SS 170 (intertidal invertebrates)

Distribution of fish (arctic)

J 18: 141 (chub & trout-perch), 793 (*Salvelinus alpinus* complex); **21**: 1129 (Greenland halibut)

B 73 (E marine larval forms); **94** (freshwater arctic & subarctic)

S 361 (arctic & subarctic ecology problems); **730** (redfish)

SS 1324 (re ecology)

Distribution of fish (Atlantic) (*see also* Exploration; International Commission for the Northwest Atlantic Fisheries)

C 1901: 59 (herring); **1902–05**: 81 (Canso, N.S.); **1906–10**: 79 (P.E.I.); **1911–14(I)**: 25, 69 (parasitized, NB.); **1918–20**: 109 (Cape Breton & Magdalen Is.); **1921**: 49 (Bay of Fundy); **2**: 161 (shad); **3**: 489 (re sex ratios); **7**: 203 (Belle Isle Strait); **8**: 13 (Hudson Bay), 433 (cod movements)

J 3: 258 (Bay of Fundy & Gulf of Maine), 329 (Cape Breton); **9**: 83, **12**: 781 (Ungava Bay); **11**: 11 (European ling), 198 (Belle Isle Strait); **15**: 275 (capelin), 1451 (herring larvae; correction on **17**: 943); **17**: 377 (Saint John R. estuary, N.B.), 699 (herring, seasonal), 731 (various fishes); **20**: 253 (oceanic puffer), 273 (black scabbardfish), 551 (winter flounder), 849 (blue whiting), 1097 (opah), 1101 (dusky sharks), 1267 (pollock), 1353 (mako sharks), 1513 (batfish); **21**: 209 (duckbill oceanic eel), 215, 429 (cod), 1129 (Greenland halibut), 1523 (American & European eels)

B 1: 7 (plaice); **2**: 9 (lumpfish); **3**: 6 (angler); **4**: 4 (muttonfish); **25**: 6 (haddock); **51**: 2 (salmon at sea); **61** (cod); **69** (haddock); **70** (N.B. smelt); **71**: 8 (halibut); **111** (herring); **120** (redfish); **130** (swordfish); **140** (sharks); **145** (scallops); **155** (all Canadian marine Atlantic species)

PRA 25: 11 (flatfishes); **32**: 3 (largemouth bass)

NRB 4 (Nfld.)

NSB 6 (Nfld. trout); **8** (Nfld.); **14** (Nfld. flatfishes)

S 5, 159, 211 (Passamaquoddy Bay); **40** (re salinity, light & temperature in ocean); **130, 205** (salmonids); **155** (anadromous on N.S. Banks); **184** (butterfish); **203** (Bay of Fundy & N.S.); **226** (fish & salps); **234** (P.E.I.); **235** (N.S.); **258, 354** (general research); **281** (re heat & light); **298** (freshet effects on salmonids); **717**

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(surface summer redfish larvae); **730** (subarctic redfish)

SS 171 (effect of tide on)

Distribution of fish (interior waters) (*see also* Fishes, freshwater; *also* names of bodies of water)

C 1901: 9 (N.B.); **1902–05**: 22, **6**: 178 (Lake Ontario), 29 (Ottawa R.); **1911–14(II)**: 1 (Georgian Bay); **1**: 133 (Quill lakes, Sask.), 419 (Athabaska lakes, Alta.); **2**: 146 (Ont.), 412 (Cultus L., B.C); **3**: 365 (Forbes Brook, P.E.I.), 377, **4**: 107 (Jasper Park); **6**: 455, 473, **8**: 1, 3 (Hudson & James bays region); 103 (B.C.)

J 2: 299, **3**: 328, **4**: 310 (Margaree R., N.S.); **5**: 294, **9**: 204 (Cultus L., B.C.); **7**: 26 (Tedford L., N.S.), 95 (N.S.), 183 (Great Bear L., N.W.T.), 248 (Beaver R., N.S.); **8**: 207 (Great Slave L.), 347 (Ont. & Que.), 383 (Charlotte Co., N.B.); **9**: 83 (Ungava Bay region), 417 (Cowichan L., B.C.); **10**: 196 (Okanagan region, B.C.); **11**: 362 (Duffin Creek, Ont.), 624 (Port John L., B.C.), 673, **14**: 651 (B.C.); **11**: 884 (hosts of *Triaenophorus*); **12**: 210 (Crecy & Gibson L., N.B.), 238 (Maritimes lakes), 487 (near Ungava Crater), 499 (Skeena R. drainage system), 618 (Copper L., N.S.); **13**: 759 (Mackenzie R. drainage system); **14**: 573 (Kootenay L., B.C., kokanee), 599 (coregonids); **15**: 203 (Heming L., Man.), 607 (various lakes, in summer); **16**: 147 (Ont. streams), 807 (Miramichi R., N.B.), 838 (Hooknose Creek, B.C.), 903 (cutthroat & Yellowstone trouts, B.C.); **20**: 735 (as gillnetted, in South Bay, Lake Huron), 1189 (white perch in lower Great Lakes), 1397 (bigmouth buffalo, Sask.); **21**: 277 (lake trout)

B 23: 29, **32**: 5 (B.C.); **56**: 28 (Okanagan lakes, B.C.); **72** (N.W.T.); **78** (Great Bear & Great Slave L., N.W.T.); **79**: 2 (Nelson R., Man.); **82**: 2 (Great Bear L.); **107** (Great Slave L.)

PRP 27: 3 (rainbow trout); **28**: 11 (whitefish in B.C. lakes)

NSB 6 (Nfld. rivers)

S 62 (Hudson Bay drainage system); **137, 138, 198, 213** (Lake Jesse, N.S.); **144, 227** (B.C.); **163** (Jones L., B.C.); **170** (Vancouver, B.C.); **197** (Shuswap L., B.C.); **200** (Cultus L., B.C.); **205** (Lake Ainslie, N.S.); **206** (N.S.); **224** (Swan L., B.C.); **229** (N.B. lakes); **242** (Potter's L., N.B.); **249, 250** (trout); **270** (Ont. salmon); **278** (P.E.I. ponds); **282** (Tathlina & Kakisa L., N.W.T.); **357** (Lake Winnipeg region); **481** (Man.)

SS 409 (Lake Ontario ciscoes); **1208** (B.C.)

Distribution of Fish (Pacific) (*see also* Exploration; International Northeast Pacific Fisheries Commission)

C 1: 285 (Departure Bay, B.C.); **3**: 265 (salmon migrations), 489 (re sex ratios); **7**: 319 (blenny)

J 3: 12 (by feed availability); **8**: 347 (B.C. bottom fishes); **9**: 141 (lumpsucker), 143 (poacher); **10**: 461 (flatfishes), 560 (Japan fishes); **11**: 335 (rockfish); **13**: 357, **19**: 271 (NE Pac.); **16**: 283 (juvenile herring, Barkley Sound); **17**: 221 (NE Pac. epipelagic); **18**: 513 (cod), 1145 (albacore tuna), 1167 (smoothtongue); **19**: 735 (herring larvae); **20**: 851 (thornback sculpin), 1095 (black snailfish), 1505 (Puget Sound sculpin); **21**: 691 (sardine subpopulations), 861 (Gulf of Alaska blue sharks), 1227 (oceanic salmon), 1333 (eulachon)

B 31: 3 (pink & chum salmon migrations); **38**: 11 (pilchard); **40**: 6 (coho salmon migrations); **47**: 31, **63**: 19, **67**: 19, **143** (herring); **64**: 4 (smelts); **66**: 5 (pink salmon migrations); **68, 68R** (all B.C. marine fishes)

PRP 73: 65 (herring larvae), 68 (lemon sole); **91**: 21 (sockeye smolt); **98**: 17 (brill); **106**: 24 (young salmon early ocean residence); **109**: 6 (NE Pac. pomfret), 9 (NE Pac. steelhead salmon)

S 130 (salmonids); **143** (goby & cottoid); **160** (estimates from fur seal stomachs); **258** (general research); **290** (from 1934–35 collections); **302** (pompano); **322** (troll-caught salmon); **334** (role in recreation & wildlife); **453** (re abundance & exploitation); **654–658** inclusive, **769, 859** (Pac. salmon stocks, coastal & open Pac.); **712** (pink salmon)

SS 522 ("Albatross" Expedition finds)

Distribution of other than fishes (*see also* names of organisms)

C 1901: 25 (clams); **1918–20**: 49 (diatoms)

J 3: 189, **20**: 1519 (Atl. zooplankton); **12**: 593 B.C. Chaetognatha), 762 (Hudson

Strait barnacles), 781, 858 (Ungava Bay crustaceans & copepods), 899 (E arctic echinoderms); **13**: 233 (arctic & subarctic Polychaeta), 489 (Pinnipedia parasites), 541 (E coast Vancouver Is. Polychaeta); **14**: 83 (small NW Atl. Cetacea; correction on **16**: 929), **14**: 165 (Dixon Entrance, B.C. Copepoda), 693 (squid off Nfld.), 975 (larval *Porrocaecum*); **15**: 1 (ascarids on porpoises), 5 (B.C. sea lions), 219, 495 (Atl. seals); **16**: 147 (Ont. streams invertebrates), 351 (Gulf of Alaska Chaetognatha); **18**: 563 (arctic phytoplankton), 663 (*Calanus* species); **19**: 271 (NE Pac. phytoplankton, etc.), 489 (W arctic *Mesidotea* isopod); **20**: 853 (NW Atl. onychoteuthid squid), 1085 (W Atl. common porpoise), 1315 (N arctic Pycnogonida), 1489 (minke whale); **21**: 419 (B.C. shrimps), 661 (Gulf of St. Lawrence lobster larvae), 1155 (B.C. introduced molluscs), 1403 (B.C. pandalid shrimps), 1505 (Canadian Arctic ascidians)

B 127 (B.C. marine plants); **137** (Atl. seals & walrus)

PRA 17: 7 (starfish); **63**: 3 (green crab)

PRP 5: 3 (shipworm); **11**: 18 (Dungeness crab); **22**: 19, **40**: 8 (oyster larvae); **61**: 3 (clams); **103**: 19, **107**: 3, 5 (plankton in B.C. inlets); **107**: 22 (postlarval crabs)

CAG 2 (arctic walrus)

CNG 68 (B.C. whales, porpoises, dolphins)

S 64 (Sydney, B.C., decapods); **147** (Queen Charlotte Is. hydroids); **600** (Foxe Basin birds); 858 (seawater particulate matter)

SS 182 (Gulf of St. Lawrence copepods); **383** (*Gammarus*); **446, 447** (Maritimes marine algae); **696** (B.C. Copepoda & Cladocera); **763** (*Cancer:* world geographical distribution re sea temperature); **1096** (northern fur seal); **1262** (intertidal bivalves)

Distribution, sex (*see* Sex ratio)

Distribution, size (*see* Size)

Distribution, vertical (*see* Distribution, depth)

Diversion of natural waters (*see also* Dams; *also* other cognate subjects)

J 14: 651 (between B.C. watersheds: effect on freshwater fishes distribution)

Diving, scuba or skin

J 19: 625 (observing Atl. salmon & trout behaviour); **20**: 1067 (investigating Atl. herring spawning)

PRP 114: 9 (for abalone prospecting)

Dixon Entrance, B.C. (*see also* Oceanography, Pacific)

J 14: 165 (copepod distribution), 945 (wind effects on inshore waters); **15**: 429 (sea heat budget; correction on **17**: 943); **18**: 311 (surface temperatures & salinity)

PRP 101: 21 (oceanographic project); **103**: 23 (currents); **107**: 5 (plankton), 27 (salmon); **108**: 18 (sea–air heat exchange)

Doan, Kenneth Henry

B 79 (Nelson R., Man., speckled trout); **98** (Hudson Bay beluga)

SS 828 (Nelson R. trout fishery); **838** (mooneye & quillback sucker records); **960** (research role in fishery management); **988** (pike–whitefish tapeworm control)

Doctor, fish (*Gymnelis viridis*) (green ocean pout)

C 8: 36 (Hudson Bay)

J 9: 123 (in Ungava Bay cod stomachs)

B 155: 317 (full description)

SS 1324 (arctic distribution & ecology)

Dodimead, Allan John

J 14: **241** (Strait of Georgia oceanography; correction on **14**: 997); **15**: 851 (NE Pac. drift bottle releases); **17**: 61 (Pac. temperature increase)

PRP 105: 16, **107**: 28 (NE Pac. oceanography re salmon migrations)

CPO 1958-6, 1959-6, -23, 1960-4, -15, 1961-11, -27, 1962-9 (NE Pac. oceanographic surveys); **1958-8** (oceanography off Aleutian Is.); **1959-10** (oceanography in B.C. approaches); **1960-19** (B.C. offshore surface water temperatures outlook); **1962-22, 1963-3** (subarctic Pac. oceanography)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

S 585A (NE Pac. oceanography); **669** (subarctic Pac. upper zone features); **860** (subarctic Pac. oceanography review re salmon)

Doe, Lancelot Athelstane Earlston

J 9: 42 (Loudoun Channel, B.C., hydrography); **12**: 1 (B.C. offshore oceanography)

PRP 84: 59 (unusual NE Pac. oceanographic condition), 70 (Loudoun Channel tidal currents); **88**: 53 (NE Pac. surface temperatures)

SS 1169 (B.C. offshore surface waters)

Dog

C 7: 57, **8**: 227 (gastric secretion after eating haddock, lobster, etc)

J 17: 81, 501 (harmlessness of ingesting *Phocanema* & *Triaenophorus* parasites in fish rations)

Dog, blue (*see* Shark, blue)

Dog salmon (*see* Salmon, chum)

Dogfish (freshwater) (*see* Bowfin)

Dogfish, Atlantic (*see* Dogfish, spiny)

Dogfish, black (*Centroscyllium fabricii*)

J 17: 731 (occurrence off N.S.); **21**: 681 (copepod parasites)

B 140: 29 (description & distribution; interchange Fig. 24 & 25); **155**: 43 (full description)

AF 12e: 18 (description)

Dogfish, Pacific (biology) (*Squalus suckleyi*) (grayfish)

C 1: 285 (feed & spawning); **6**: 341 (muscle, blood & urine creatine); **7**: 465 (reaction to sound); **8**: 101 (tapeworm parasite)

B 27: 9 (tagging); **68**: 59, **68R**: 81 (full description)

PRP 23: 3 (description); **34**: 16 (gear & bait); **46**: 19 (with rubber bands); **51**: 16 (reproduction); **53**: 12, **67**: 31, **70**: 23, **92**: 20 (tagging & returns); **61**: 24 (conservation conference); **66**: 16 (length re liver vitamin A potency); **75**: 57 (predation by hagfish); **95**: 35 (feeding habits); **98**: 10 (salmon repellent substance in)

CNG 33, 41 (winter catches, 1952–55); **35** (taken during shrimp prospecting); **64**: 48 (productive capacity)

CGS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)

S 13 (pentoses in organs); **58** (salinity changes reactions); **59** (reducing substances in blood); **66** (central nervous system vascularity); **81** (muscles creatine); **82** (arginase in organs); **119** (heart & urea); **392, 453, 851**: 50 (B.C. fishery, history & prospects)

SS 109 (enlarged thyroid); **134** (unutilized resource); **189, 211** (pentose in organs); **277** (colon histology & phylogeny); **329** (blood vascular system); **330** (life history, physiology); **842** (abundance)

Dogfish, Pacific (products) (grayfish; greyfish)

J 4: 174, **6**: 113 (liver oil vitamin A); **4**: 312 (liver oil vitamins A & D); **6**: 326 (glycerol from liver oil); **16**: 791, **17**: 811 (flesh keeping quality); **18**: 377 (hypocholesterolemic activity of liver oil), 865 (fatty alcohols from liver oil); **19**: 321 (gelatin from)

B 37, 59, 89 (oils & vitamins; *see* their indexes)

PRP 12: 3, **31**: 3, **33**: 8, **34**: 3, **44**: 8, **45**: 21, **50**: 4, 10, **53**: 7, **66**: 12, **73**: 48. 57, **76**: 63, **77**: 116 (livers, liver oils, vitamin A); **33**: 8 (body oil vitamin A potency); **56**: 7 (dehydrated); **56**: 11, **59**: 20, **63**: 32 (liver oil unsaponifiables); **58**: 3 (liver oil industry); **63**: 44 (liver oil expansion coefficient); **63**: 45 (skin uses); **69**: 66 (liver protein value); **82**: 20, **84**: 64 (value of livers to fishermen); **110**: 13 (uses as food, feed; oil, meal)

CNS 4, 5, 8, 11 (landings by B.C. trawlers)

CVI 6 (liver oil vitamin A); **11** (liver solubles amino acids)

S 55 (liver oil vitamin A); **86** (liver oil vitamin D); **392** (B.C. industry development); **592** (liver oil anti-hypercholesterolemic action); **851**: 50 (liver & carcasses in B.C. fishery, 1921–61)

SS 362 (liver oil vitamin D); **530** (liver oil vitamins A & D); **782** (unsaponifiables determination in liver oil)

Dogfish, smooth (*Mustelus canis*)

B 155: 38 (full description)

AF 12e: 6 (description)

Dogfish, spiny (*Squalus acanthias*) (Atlantic dogfish; grayfish)

C 1902–05: 81 (N.S.), 91 (trematode parasites); **1918–20:** 123, 133 (utilizations, including canning); **1:** 401 (urea in fresh & frozen); **2:** 126 (insulin in); **3:** 467 (muscle tensile strength re smoking); **7:** 477 (spiral intestine movement mechanism); **8:** 275 (slime & intestine flora)
J 7: 96 (thiaminase in); **11:** 351 (migrations of Nfld.); **16:** 811 (off Miramichi R.)
B 140: 42 (description & distribution, NW Atl.); **155:** 46 (full description)
CNG 64: 28 (productive capacity)
CVI 17 (flesh thiamin)
AF 12e: 17 (description)
MSP 2 (shellfish not an attractive bait for)
NRB 15 (life history; liver oil vitamin A)
NSB 5 (utilization)
S 17, 18 (insulin in)
SS 134 (unutilized resource); **329** (blood vascular system); **737** (muscle autolysis)

Dollar, Alexander M.
SS 1322 (endogenous proteolytic enzymes)

Dollarfish (*see* Butterfish)

Dollinger, Edward Joseph
CVG 33 ("chalky" halibut flesh)

Dolloa cyclolepis (*see* Rattail, smoothscale)

Dolly Varden (*Salvelinus malma*) (Dolly Varden char; bull trout)
J 11: 686 (parasites, B.C.); **12:** 499 (Skeena R. drainage lakes); **13:** 764, **14:** 656 (B.C. distribution); **17:** 929 (consumer of sculpins); **18:** 679 (phylogeny, osteology), 793 (systematics, distribution); **20:** 101 (muscle myogen pattern)
B 32: 37 (B.C.); **68:** 94, **68R:** 112 (full description); **72:** 90 (NW Canada); **84:** 25 (Cowichan R. system, B.C.)
PRP 18: 3, **32:** 21 (preying on young sockeye); **66:** 12, **67:** 23, **68:** 55, **69:** 70, **72:** 28, **74:** 9 (Skeena R. drainage lakes)
S 144: 63 (B.C. distribution); **148** (predation on salmon fry); **263** (scale pattern & counting)
SS 1208: 61 (full description)

Dolphin (Atlantic) (*Coryphaena hippurus*)
J 16: 509 (records off P.E.I. & N.S.); **19:** 517 (off Georges Bank)
B 155: 256 (full description)

Dolphin, Atlantic bottlenose (*Tursiops truncatus*)
J 14: 93 (N.B. record)
CNG 32R: 13 (description)
S 578 (age from teeth)

Dolphin, Baird's (*Delphinus bairdi*) (saddleback dolphin)
CNG 32R: 11 (description); **68** (distribution)

Dolphin, common (*Delphinus delphis*)
J 14: 93 (N.S.)
B 89: 352 (oil characteristics)
S 519 (Nfld.)

Dolphin, long-snouted (*Stenella styx*)
CNG 32R: 12 (description); **68** (distribution)

Dolphin, Pacific striped (*Lagenorhynchus obliquidens*)
J 17: 123 (off B.C.; correction on **J 17:** 944)
CNG 32R: 11 (description); **68** (distribution)

Dolphin, right whale (*Lissodelphis borealis*)
CNG 32R: 13 (description)

Dolphin, Risso's (*Grampus griseus*) (Risso's grampus)
CNG 32R: 9 (description)

Dolphin, saddleback (*see* Dolphin, Baird's)

Dolphin, spotted (*Stenella graffmani*)
CNG 32R: 12 (description)

Dolphin, white-beaked (*Lagenorhynchus albirostris*)
J 14: 93 (Nfld., description)

Dolphin, white-sided (*Lagenorhynchus acutus*)
J 14: 95 (Nfld., description)

Dolphins (general)
J 14: 93 (NW Atl.)
B 59: 37 (oil characteristics); **89** (oils; *see* its index)
CNG 32R (key & descriptions); **68** (distribution; photos)
SS 1405 (commercial uses, Ceylon)

Dombroski, Edward
J 12: 93 (sockeye smolts cestode & nematode infection)
PRP 91: 21, **99**: 30 (Babine L., B.C., sockeye smolts)

Dominance of year classes (*see also* Salmon)
J 3: 160 (B.C. herring); **11**: 284 (Lake Winnipeg whitefish)
SS 919 (cyclic, in Fraser R. sockeye); **1399** (cyclic, in Adams R. sockeye)

Donefer, Eugene
J 17: 501 (effect of feeding *Phocanema* to pups)

Doré (*see* Walleye)

Dorosomo cepedianum (*see* Shad, gizzard)

Dory, American John (*Zenopsis ocellata*)
J 16: 508 (records of juvenile off N.B. & N.S.)
B 155: 232 (full description)

Dory, Coster (*Allocyttus verrucosis*)
B 68R: 178 (full description)

Doucet, Wilbert Francis
J 17: 815 (Charlotte Co., N.B., herring fishery economics)
B 130 (NW Atl. swordfish economic importance; correction on **J 21**: 1554)

Douglas, Carman Wesley
B 98 (Hudson Bay beluga)

Doxtator, Everett Arthur
J 17: 687 (aquarium for predator–prey studies)

Dracontiasis
C 8: 161 (nematode infection in some B.C. fishes)

Drag (for determining water currents) (*see* Drift, determination of)

Drag; Dragger vessel; Dragging
J 12: 797 (re scallop abundance fluctuations)
B 135: 5 (experimental for scallops)
PRA 52: 9 (for scallops); **69**: 33 (mesh regulations for groundfish)
CSG 12, 17 (for flounders); **22** (boat for inshore scallop)
SS 1234 (scallop selection)

Dragonfish, arrow (*Tactostoma macropus*) (arrow-fish)
B 68: 109, **68R**: 136 (full description)

Dragonfish, boa (*Stomias boa ferox*)
B 155: 133 (full description)

Dragonfish, highfin (*Bathophilus flemingi*)
B 68R: 135 (full description)

Dragonfish, threelight (*Trigonolampa miriceps*)
B 155: 135 (Atl. occurrence)

Dragonfish, torpedo (*Grammatostomias dentatus*)
B 155: 134 (full description)

Dragonflies (*see also* Insects; Odonata)
C 1911–14(II): 53 (Go-Home Bay, Ont.)
S 200 (Cultus L., B.C.)
SS 58 (N American *Aeshna*)

Dreamer (*Oneirodes bulbosus*) (bulb-fish)
B 68: 338; **68R**: 402 (description)

Dredge; Dredging
J 17: 591 (for borrowing aquatic forms)
B 60: 59, **131**: 109 (commercial, for Atl. oysters); **102**: 2, **128** (hydraulic, for shellfish); **135**: 5 (experimental, for scallops)
PRA 66: 3 (hydraulic, for shellfish)
PRC 2: 14 (for sea lamprey larvae; anchor dredge)
PRP 109: 3 (for decayed bark causing sudden fish mortality)
S 761 (effect of hydraulic on undersize clams)
SS 833 (deepwater automatic-closing Ekman); **1110, 1253, 1337, 1369** (mechanical, for shellfish)

Dreyer, F. A.
SS 1336 (ICNAF Canadian groundfish length frequency data)

Dried fish (*see* Dehydration (of fish); Drying (of fish))

Drift, determination of (*see also* Currents, marine)
C 1: 101 (Bay of Fundy by bottles)
J 11: 223 (bottles, Belle Isle Strait); **13:** 1 (plastic-coated cards, Georgian Bay); **14:** 931 (transponding buoys); **15:** 78 (bottles, Scotian Shelf), 851 (bottles, NE Pac.), 1065 (bottles, Strait of Georgia); **16:** 635 (drags from anchored vessel); **17:** 181, 743 (bottles, Bay of Fundy); **18:** 221 (bottles, re Bay of Fundy herring movements)
PRP 25: 21 (Japanese net floats drift to B.C.); **104:** 30 (bottles, Strait of Georgia); **111:** 22 (bottle drifts to Hawaii)
SS 200, 201 (bottles, Gulf of Maine & Bay of Fundy); **218, 219** (bottle crosses Atl. Ocean); **543** (bottles, Hudson Bay); **1176** (bottle's long drift to Honolulu); **1315** (bottle swallowed by porbeagle); **1316** (sea-bed drifter)

Drifter, sea-bed (*see* Drift, determination of)

Drill, eastern oyster (*Urosalpinx cinerea*)
J 21: 1155 (introduction & distribution, B.C.)
B 34: 22 (predation on Olympic oyster); **60:** 49, **131:** 85 (predation on Atl. oyster)
PRA 37: 14 (predation on oysters, & control)
COF 10 (re oyster farming)

Drill, greater clam (*Lunatia heros*)
J 15: 1355 (control on clam & mussel beds)

Drill, Japanese oyster (*Purpura clavigera*; *Macinella clavigera*; *Ocinebra japonica*)
J 15: 529 (feeding habits on mussel, clam, oyster); **21:** 1155 (introduction & distribution, B.C.)

Drills (as clam predators)
J 15: 529, 1355 (feeding habits; control)
PRP 50: 21 (moon snail, etc.)

Drinnan, Roy Ellis
CSG 34 (rehabilitating diseased oyster stocks)
S 678 (disease-depleted oyster populations rehabilitation)

Drip (in fish muscle) (*see also* Denaturation; Fillets)
J 5: 411 (pH & salt effect on); **13:** 147 (in jellied vs. normal fillets), 159 (in frozen plaice fillets); **21:** 101, 539, 1397 (in thawing polyphosphate-treated cod), 719 (in electronic thawing of cod)
PRA 2: 12 (cause & prevention in frozen fish); **40:** 3 (protein losses incurred by)
PRP 14: 3, **71:** 15 (causes); **33:** 13, 17 (in iced or frozen halibut); **37:** 12 (mechanism of, during freezing); **43:** 10, **47:** 5 (degree & control in defrosted fish); **44:** 12, **45:** 19 (control by brining); **47:** 3, **50:** 16 (re thawing); **48:** 19 (losses in fillets); **49:** 3 (refractive index of, as freshness test)
S 685 (in blocks frozen from very fresh cod)
SS 1237 (re frozen blocks for fish sticks)

Drosophilia (fruit flies)
J 11: 595 (potential fecundity)

Drought
PRP 88: 72 (causing fish mortality due to dissolved oxygen deficiency)

Drugs, effect on animals (*see also* Anaesthetics; Guiding; Insecticides; Odour, perception & reactions to; Poisons)
C 7: 19, 31 (hormones on skate circulation), 439 (skate-skin extractives on human skin & skate blood pressure), 447, 477, **8:** 145 (adrenaline, atropine, pilocarpine & acetylcholine, on skate digestion)
J 1: 239, 251 (atropine, adrenaline & histamine, on skate stomach), 261 (adrenaline on skate claspers)
S 8 (benzene, phenol, camphor & menthol, on retinal reflex)

Drum, black (*Pogonias cromis*)
B 155: 261 (full description)

Drum, freshwater (*Aplodinotus grunniens*) (drum)
J 16: 137 (Lake Winnipeg commercial catches)
PRC 2: 3 (Lake Erie trawl catches), 37 (Lake Erie: canning)

CCG 4: 10 (sausage); **5**: 1 (proximate analysis)
CNG 64: 71 (productive capacity)
S 481 (Man.)

Drumming muscle
J 15: 355 (of haddock air-bladder)

Drummond, George Ira
S 865 (deoxyribonucleoside phosphates synthesis & hydrolysis)
SS 1308 (ribonucleoside cyclic phosphates)

Drums, oil
PRP 24: 23 (cleaning of, for fish oils)

"Dry Ice"
PRP 34: 18 (railway transport refrigerant); **35**: 18 (cooling rate for fish)

Drying (of fish) (*see also* Cod, Atlantic (salted); Dehydration; Humidity; Meal; Salt fish; Smoking)
J 6: 380 (heavily salted cod); **7**: 211 (fresh capelin); **12**: 68 (artificial, of salted cod); **13**: 874 (viscera autolysates); **15**: 543 (thermocouple control); **18**: 147 (artificial, for Cambodian fish)
B 9 (salt cod); **25**: 24 (haddock); **59**: 425 (antioxidant protection of oil in product); **112** (salted cod)
PRA 12: 7, **13**: 3 (fillets before smoking); **20**: 8, **24**: 17 (humidity significance); **34**: 15 (boneless cod); **35**: 26, **39**: 14 (equipment); **37**: 18 (hard-salted cod); **38**: 6 (capelin); **47**: 5 (nomograph for moisture loss calculation)
PRP 77: 106 (scorch & ignition point of herring meal); **79**: 44 (with infra-red radiation)
CGR 4 (salt cod)
NSB 1, 9 (cod)
S 373, 374 (heat effect on herring meal nutritive value)
SS 704, 742, 927 (salt cod); **1114** (Ceylon fish)

Drying property of marine animal oils (*see also* Oils and fats, processing)
C 6: 365 (rate determination apparatus); **8**: 321 (bodied pilchard oil)
J 1: 487 (rate of pilchard oil); **2**: 13 (structure & properties of pilchard oil films)
B 37, 59, 89 (marine animal oils; *see* their indexes)
PRA 57: 3 (fractionated seal oil)
PRP 10: 17, **24**: 3 (pilchard oil)

Dubokovic, George Velijka
CNG 35, 39 (shrimp prospecting, 1954–55)

Duck Lake, B.C. (*see also* Okanagan Lake)
B 56: 26 (limnobiological survey)

Ducks (*see also* Birds; Predators, bird)
B 17: 27, 42 (as B.C. herring predators)
PRP 50: 21 (B.C. clam predators)
S 224 (feed, at Swan L., B.C.)
SS 622 (sockeye predators); **732** (B.C. lesser & greater scaups); **764** (B.C. mallard); **778** (B.C. pintail)

Duerr, James Donald
J 8: 325 (muscle protein salt denaturation)

Duff, David Cecil Buchanan
C 5: 193 (parasitic aquatic fungus); **8**: 103 (B.C. fish furunculosis)
J 5: 1 (*Bacterium salmonicida* viability)
PRP 15: 7 (B.C. furunculosis)
S 218 (*B. salmonicida* phases); **252** (trout immunization against *B. salmonicida*)
SS 424, 425, 609, 644 (*B. salmonicida* furunculosis activity)

Duff, Dorothy
C 1914–15: 95 (haddock growth & maturity)

Duff, George Lyman
C 4: 287 (Atl. cod scale zones)

Dugal, Louis-Charles
J 7: 471, **8**: 189 (seal oil purification)
PRA 32: 5 (cod liver storage effect on oil yield); **34**: 19, 21 (cod liver oil refining); **37**: 9 (seal liver nutritive value); **57**: 3 (seal oil fractionation); **59**: 27 (soap from seal oil); **62**: 10 (cod bile recovery); **65**: 21 (cod bile acids)
PRC 1: 28 (Lake Erie smelt canning)
CCG 5: 1 (proximate composition of various freshwater fishes)
SS 936 (seal oil hydrogenation); **1286** (London Station activities)

Dugal, Louis-Paul
PRA 30: 5 (lobster biology)

Dulse (*Rhodymenia*)
B 127: Fig. 27 (*palmata* as B.C. resource)

"Dun" (*Sporendomena* moulds on salt fish) (*see also* Moulds)
J 5: 276, 287 (nature, classification, action); **11**: 901 (mould osmophilism)
B 112: 36 (nature & effects)
PRA 28: 17 (nature); **51**: 9 (determination); **58**: 32, **60**: 4, **71**: 13 (control)
PRP 99: 22 (inhibitors for)
S 417 (inhibition on smoked fish)

Dunbar, Maxwell John
J 6: 419 (Baffin Is. coastal *Themisto*), 460 (W Greenland current); **9**: 65, **13**: 41 ("Calanus" Expedition station lists); **9**: 83 (Ungava Bay fishes); **11**: 709 (Ungava Bay amphipods); **15**: 155 (arctic physical oceanography)
B 73 (E Canadian Arctic young marine fishes); **85** (arctic Pinnipedia); **88** (E arctic waters)
S 326 (Canadian Arctic & Subarctic marine resources); **329** (Ungava Bay problem); **361** (arctic & subarctic marine ecology problems); **379A** (climatic change in the sea); **420** (E Arctic Ocean temperature inversions); **441**: 177 (recent Greenland biological research); **469** (1947–55 "Calanus" Expeditions in arctic); **502** (*Themisto libellula* study); **762** (*Sagitta* life-cycle factors)
SS 829 (delimitation of arctic & subarctic zones); **868, 937, 1070** (E arctic research); **881** ("Calanus" research vessel); **907** (oceanographic feed-back systems); **1067** (arctic water masses, circulation, ice cover); **1068** (arctic marine life); **1069** (Canadian Atl. walrus status); **1112** (U.S.S.R. plan to dam rivers & Bering Strait); **1113** (Ungava Bay amphipods zoogeography)

Duncan, Douglas Wallace
J 17: 347 (maturing sockeye salmon histidine content)
PRP 109: 14 (whale carcass preservation with antibiotics)
CVI 20 (whale carcass antibiotic treatment)
S 537 (spawning migratory sockeye biochemistry)

Dunlop, Henry Adam
C 2: 151 (sockeye salmon scale growth rate)

Dunn, Andrew Fletcher
PRA 36: 3 (heat transfer in trawler holds)

Duriaratnam, M.
SS 1018, 1071 (Ceylon red seaweed resources)

Dussault, Henri Paul
J 9: 157, **11**: 261, **13**: 183, 195 (halophilic bacteria culture & estimation); **19**: 437 (fish-brine coliform bacteria estimation)
PRA 44: 12, **55**: 7, **58**: 3 (salt fish "red"); **51**: 9, **71**: 13 (control of "dun" in salt fish); **55**: 3 (light-salted fish bacteriology); **65**: 12 (coliform bacteria detection); **66**: 13 (fish plant chlorination); **67**: 23 (rosefish fillets trimethylamine spoilage testing)
SS 989 (Gaspé-cured cod); **1073** (improved halophilic bacteria staining technique); **1151** (halophilic bacteria fate in stored salt); **1152** (halophilic bacteria salt tolerance in salted fish); **1236** (marine bacteria)

Dybhavn, John
B 59 (Foreword)
PRP 44: 20 (resignation of W. A. Clemens)
J 6: 204 (obituary of)
PRA 34: 3 (obituary of)
PRP 55: 3 (obituary of)

Dye (*see* Guiding; Marking; Pigment)

Dyer, Frances Elizabeth
J 6: 403 (iced eviscerated cod spoilage); **7**: 17 (bacterial effect on choline), 128 (Atl. cod microorganisms), 449 (cod fillet palatability changes), 580 (cod fillet spoilage); **8**: 309 (trimethylamine oxide estimation)
PRA 37: 3 (iced gutted cod spoilage); **38**: 10 (freshly cut fillet spoilage); **40**: 3 (iced gutted cod leaching); **41**: 4 (cold-stored cod fillet quality)

Dyer, William John

J 6: 53 (fish spoilage surface effects), 351, **7:** 576 (colorimetric trimethylamine (TMA) determination); **6:** 359 (spoilage TMA & amine development), 403 (iced eviscerated cod spoilage), 414 (colorimetric nitrite determination); **7:** 449 (cod fillet palatability changes), 461, 536 (spoilage bacteria nitrite reduction), 580 (cod fillet spoilage), 585 (extracting fish protein fractions); **8:** 309 (TMA oxide estimation), 314 (TMA oxide content of marine forms), 325 (muscle protein salt denaturation); **12:** 646 (sturgeon protein albumin); **13:** 47 (frozen oyster storage), 129, 569, **14:** 627, 925 (various frozen fish fillets storage); **14:** 637 (frozen lobster meat discoloration); **16:** 43 (frozen fish lipid hydrolysis), 449 (cod & haddock reddish flesh); **17:** 483, 495, 893 (proximate analyses of various fishes), 641 (cod muscle rigor process); **20:** 1153 (porbeagle composition, palatability); **21:** 101, 539 (frozen cod polyphosphate treatment), 577 (frozen cod palatability), 813 (irradiated scallop storage), 827 (haddock fillets irradiation)

PRA 30: 8 (salting fish by weight); **32:** 6, **33:** 3 (salt uptake by cod); **34:** 4 (colour test for TMA); **36:** 19 (smoked fillets keepability); **37:** 3 (iced gutted cod spoilage); **38:** 10 (freshly cut fillets spoilage); **40:** 3 (iced gutted cod leaching); **41:** 4 (cold-stored cod fillet quality); **45:** 14, **60:** 3 (fish stained by impure salt); **66:** 9 (fillets from frozen plaice); **69:** 28 (Na phosphate crystals on salt cod); **71:** 17, **72:** 37 (frozen cod fillets fat hydrolysis); **73:** 17 (“salt fish” flavour in frozen cod fillets)

CHN 2 (frozen lobster meat discoloration)

S 324 (frozen fish protein denaturation); **455** (frozen vs. unfrozen sardines for canning); **510B, 566** (frozen fish storage & transport); **523** (Na phosphate crystals on salt fish); **575** (TMA in fish), **577** (lipid extraction & purification method); **685** (salt fish blocks moisture content); **741, 867** (frozen seafoods quality); **781** (stored refrozen cod fillet changes)

SS 757 (rapid NaCl determination in presence of protein); **772** (rapid marine fish spoilage test); **882** (cod fillets taste panel tests); **1019** (fish denaturation problems); **1327** (“wet” frozen fish blocks); **1287** (freezing effects on protein)

Dymond, John Richardson

C 5: 467 (W Canada ciscoes); **6:** 391 (2 new B.C. trout); **8:** 1 (Hudson & James bays coregonine fishes)

J 12: 795 (obituary of G. B. Reed)

B 32 (B.C. trout & other game fishes); **72:** 86 (conclusions from NW Canada fisheries survey)

PRP 102: 3 (obituary of G. B. Reed)

S 85 (B.C. trouts); **130** (N America salmonids distribution & relationships); **144** (B.C. freshwater fishes); **293** (European studies of marine fish populations)

SS 320 (a prowfish record); **367** (B.C. trout production critical factors); **673** (possible cod-haddock hybrids); **705** (Pac. salmon in Arctic Ocean); **712** (Pac. salmon not established on Atl. coast); **758** (NW Canada coregonine fishes); **849** (common & scientific names of Canadian & U.S.A. fishes)

J 20: 255 (an appreciation of)

Dynamics, in oceanography (*see also* Currents; Oceanography; Transport of ocean water masses)

J 13: 385 (Chatham Sound, B.C.), 435 (Cabot Strait), 739 (Hebron Fiord, Labrador)

SS 1290 (energy transformations); **1327** (currents)

Dynamics, population (*see also* Population studies and dynamics)

SS 1302 (history of development of theory)

E

Eagle, bald (*see also* Birds; Predators, bird)

C 1: 291 (as Pac. dogfish predator)

B 58: 10 (as Atl. salmon predator)

Eagles, Douglas Eaton

J 12: 75 (Atl. cod proteins)

Ear (*see* Otoliths, age determination from; Sound, reaction to)

Ear plugs
J 20: 1489 (minke whale age determination from)

Echeneis naucrates (*see* Sharksucker)

Echinoderms (*see also* Sea-cucumbers; Sea-urchins; Starfishes)
C 1902–05: 36 (list of N.B. & N.S.); **1917–18:** 235 (E Canadian); **1:** 21 (Hudson & James bays)
J 3: 350 (James Bay): **9:** 164 (vitamin B_{12} in); **12:** 899 (E arctic)
S 517 (review of sterols in); **587** (of Minas Basin, N.S.); **623** (arctic)
SS 166 (migrations); **221** (development & larval forms); **260** (commensalism with annelid)

Echinoidea (*see* Sea-urchins)

Echinorhinus brucus (*see* Shark, bramble)

Echo sounding (for fish) (*see also* Sound, reaction to)
J 17: 211 (herring, re "scattering layers"), 699 (re herring vertical distribution)
B 63 (B.C. herring); **111:** 44 (Atl. herring)
PRC 2: 3 (Lake Erie smelt)
PRP 55: 4, **61:** 17 (B.C. herring)
CNG 26 (B.C. herring)
SS 972 (does it frighten fish?); **1167** (does not frighten fish)

Echo sounding (for depth) (*see* Limnology; Oceanography)

Ecology (The following are general references only; references to the ecology of individual classifications or species of organisms will be found under their names. *See also* other cognate subjects, e.g. Environment)
J 20: 105 (sympatric daces)
S 275 (method: zoapocrisis); **289** (method: biapocrisis); **361** (arctic & subarctic marine); **441** (Greenland flora); **511** (of streams re anadromous fish production); **648** (re Atl. oyster disease)
SS 257 (classification); **259** (re biology partition); **386, 390, 411, 415, 442** (B.C. small lakes); **447** (Maritimes marine algae); **461** (littleneck & butter clams); **507** (Ont. streams); **593, 713** (polygonal graphing of data); **1324** (re arctic fishes distribution); **1331** (Atl. salmon ectology)

Economics, fishery (The following is not an exhaustive list of references to this subject, which is too broad to be covered here. *See also* names of organisms and products; *also* other cognate subjects, e.g. Exploitation; Management; Marketing; Resources)
J 10: 442 (resource optimal utilization); **12:** 85 (effects on fish landings); **14:** 669 (re commercial marine fisheries management), 683 (optimum fisheries exploitation level); **17:** 625 (Lake Winnipeg whitefish fishery), 815 (Charlotte Co., N.B., herring fishery)
B 130 (NW Atl. swordfish fishery)
CJG 3 (of Nfld. longlining)
S 306 (Canada's known & unknown oceans)
SS 610 (re science)

Ectology
SS 1331 (method in ecology of Atl. salmon)

Editors
J 20: i (change in, for Journal)

Edmondson, Wallis Thomas
SS 810 (mathematical formulation of biological productivity)

Eel, American (*Anguilla rostrata*) (*A. bostoniensis*; silver eel)
C 1902–05: 83 (N.S.), 91 (trematode parasites); **1911–14(II):** 27 (Lake Huron); **1914–15:** 115 (effect of lights on migration)
J 7: 94 (thiaminase in muscle & viscera), 432 (effect of currents on movement); **12:** 210 (N.B. lakes), 238 (Maritimes); **16:** 147 associations in Ont. streams), 818 (Miramichi Bay, N.B.); **21:** 1523 (breeding area)
B 7: 19 (Langerhans islets tissue re insulin); **155:** 154 (full description)
PRA 7: 6, **67:** 19 (predation by); **20:** 3 (lack of trimethylamine oxide in tissues),

6 (populations in N.S. lakes); **25:** 7 (smoking); **25:** 9, **28:** 8 (canned in jelly)
CNG 64: 28 (productive capacity)
CSG 13 (fishing methods)
S 17: 21 (insulin in); **110** (ultraviolet light effect on); **137, 213:** 405 (Lake Jesse, N.S.); **206** (in 3 N.S. lakes); **234** (Malpeque Bay, P.E.I.); **385, 507** (Atl. salmon predator); **418** (preventing young from entering a lake); **461** (response to electrofishing); **819** (oil fatty acids distribution re metabolism)
SS 343 (elvers in haddock stomachs); **1230** (life history, feed, trapping, utilization as food)

Eel, American conger (*Conger oceanicus*) (sea eel)
J 16: 507 (N.B. & N.S. records)
B 155: 161 (full description)

Eel, Atlantic snipe (*Nemichthys scolopaceus*)
B 155: 158 (full description)

Eel, common wolf (*Lycenchelys paxillus*)
B 155: 317 (full description)

Eel, conger (*see* Eel, American conger; Pout, ocean)

Eel, duckbill oceanic (*Nessorhamphus ingolfianus*)
J 21: 209 (first NW Atl. record)
B 155: 154 (recent occurrence noted)

Eel, European (*Anguilla anguilla*)
J 21: 1523 (breeding area)

Eel, Gray's cutthroat (*Synaphobranchus kaupi*) (longnose eel)
B 155: 163 (full description)

Eel, longnose (*see* Eel, Gray's cutthroat)

Eel, moray (*see* Moray, green)

Eel, rock (*see* Gunnel, rock)

Eel, sand (*see* Sand lance)

Eel, Sar's wolf (*Lycenchelys sarsi*)
B 155: 318 (full description)

Eel, sea (*see* Eel, American conger)

Eel, shortnosed snipe (*see* Sawpalate, stout)

Eel, silver (*see* Eel, American)

Eel, snake (*Omochelys cruentifer*)
B 155: 161 (full description)

Eel, snipe (*Avocettina gilli*)
B 68: 121, **68R:** 159 (full description)

Eel, snubnose (*Simenchelys parasiticus*)
B 155: 157 (full description)

Eel, spiny (*see* Tapirfish, shortspine)

Eel, sword-tail (*see* Tapirfish, largescale)

Eel, wolf (*see* Wolf-eel)

Eel-blenny (*see* Eelblenny; *also* Gunnel, crested; Prickleback, snake)

Eel-grass (*Zostera marina*)
J 7: 545 (effect on quahaug growth)
B 127: 9, 31 (B.C., description & use)
PRA 5: 11 (disease)
PRP 29: 20 (seed to Atl. coast); **84:** 58 (mortality from frost)
CNG 44: Fig. 1 (used by spawning herring)
CSG 23 (chemical control of)
SS 501, 502 (new fungus on); **668** (Labyrinthula on Pac. coast); **954** (uses; effect on oyster beds)

Eel-shark (*Chlamydoselachus anguineus*
AF 12d: 5 (description)

Eelblenny, slender (*Lumpenus fabricii*)
C 8: 35 (Hudson Bay)
J 9: 123 (Ungava Bay); **11:** 249 (Belle Isle Strait)
B 155: 310 (full description)

Eelblenny, stout (*Lumpenus medius*)
B 155: 312 (full description)

Eelpout (freshwater) (*see* Burbot)

Eelpout, arctic (*Lycodes reticulatus*)
C 8: 37 (Hudson Bay)
J 9: 123 (Ungava Bay)
B 155: 323 (full description)

Eelpout, Atlantic (*Lycodes atlanticus*)
B 155: 316 (mention of: nomenclature confused)

Eelpout, bigfin (*Aprodon cortezianus*)
B 68: 192, **68R:** 386 (full description)

Eelpout, blackbelly (*Lycodopsis pacifica*)
B 68: 193, **68R:** 385 (full description)

Eelpout, blackfin (*Lycodes diapterus*) (*Furcimanus diapterus*)
B 68: 198, **68R**: 387 (full description)

Eelpout, blackmouth (*Lycodapus fierasfer*) (pearly eelpout)
B 68: 195, **68R**: 391 (full description)

Eelpout, Esmark's (*Lycodes esmarki*)
B 155: 320 (full description)

Eelpout, Laval's (*Lycodes lavalaei*)
B 155: 321 (full description)

Eelpout, pale (*Lycodes pallidus*) (for Pac. form, *see* Eelpout, pallid)
B 155: 322 (full description)

Eelpout, pallid (*Lycodapus mandibularis*) (pale eelpout)
B 68: 196, **68R**: 391 (full description)

Eelpout, pearly (*see* Eelpout, blackmouth)

Eelpout, polar (*Lycodes turneri*)
B 155: 224 (full description)

Eelpout, shortfin (*Lycodes brevipes*)
B 68: 191, **68R**: 389 (full description)

Eelpout, soft (*Bothrocara molle*)
B 68: 194, **68R**: 390 (full description)

Eelpout, Vahl's (*Lycodes vahlii*)
J 16: 512 (in lower St. Lawrence R.)
B 155: 325 (full description)

Eelpout, wattled (*Lycodes palearis*)
B 68: 190, **68R**: 388 (full description)

Eelpout, wolf (*Lycenchelys verrilli*)
B 155: 319 (full description)

Eelpouts (*Maynea; Melanostigma; Oidiphorus*)
J 16: 513 (*Melanostigma gelatinosum* in lower St. Lawrence R.)
S 826 (revision of *Melanostigma* genus; keys for *Maynea* & *Oidiphorus*)

Efficiency of fishing gear (*see* Catch per unit effort; Effort and intensity of fishing; Gear; *also* names of international commissions and names of types of gear)

Effluent (*see* Dilution effect; Flow; Pollution; Stickwater)

Effort and intensity of fishing (*see also* Abundance; Catch per unit effort; Catchability; Catches; Yield; *also* names of international commissions)
J 1: 277 (lobster); **3**: 145 (B.C. herring); **8**: 264 (re gill nets); **14**: 797 (effects on genetic pattern); **19**: 521 (effect on yield); **20**: 1371 (pelagic, for sockeye salmon)
B 107 (fishing success index, Great Slave L.; correction on **J 14**: 997); **119**: 19 (re fishing effectiveness)
PRA 28: 7, **30**: 7, **37**: 10 (lobster); **63**: 13 (Atl. salmon)
PRP 101: 12, **111**: 14 (chinook & coho salmon trolling); **102**: 10 (Pac. cod); **104**: 38 (cutthroat trout sports fishery)
CJG 1–9 inclusive (Nfld. Danish seiners & trawlers, 1954–60)
CNS 12 (Canada & U.S.A. Pac. coast trawl fishery, 1959–61)

Egami, Nobuo
J 16: 363 (bibliography on medaka)

Egg albumin
PRP 71: 5 (substitute for, from fish)

Egg cases (*see also* Eggs)
J 12: 287 (egg-mass collars of whelk); **21**: 853 (of Oregon big skate)
B 140: 20 (of cat sharks)
PRP 25: 12 (of skate)
SS 136 (of hagfish)

Egg oils
B 89: 66, 323 (physical & chemical characteristics)

Eggs (*see also* Embryology; Hatcheries; Larvae; Ovaries; Physiology, reproduction; Reproduction; Spawning; Spawning beds)
J 6: 252 (effect of mechanical shock on hatchability of teleostean); **7**: 513 (amino acids of B.C. herring & salmon); **11**: 933, **15**: 229 (Pac. salmons re oxygen supply; corrections on **16**: 385, 386); **12**: 61 (albacore), 287 (naticid whelks), 781 (scallops); **14**: 153 (effect of electrofishing shock); **15**:

313 (number in Pac. herring), 797 (carbon dioxide re salmon), 1383 (size in cod); **16:** 421 (nucleic acids of sockeye; corrections on **16:** 930), 679 (Pac. herring), 835 (number in pink & chum salmon; correction on **17:** 943); **17:** 245 (semibuoyancy of goldeye), 323 (composition of coho), 913 (collagen in Pac. herring); **19:** 1169 (masses, of *Sebastolobus* species); **20:** 249, 841 (temperature effects on *Triaenophorus*), 483 (temperature requirements of sea lamprey), 1087 (demersal quality of fertilized Pac. cod), 1089 (immature stages & size of *Triaenophorus*); **21:** 9 (development rate of Pac. cod), 469 (fatty acids of Atl. cod), 851 (cases, of big skate), 1385 (spawning beds capacity for pink salmon), 1531, 1533 (demersal quality & development rate of rock sole)

B 89: 66, 323 (egg-oil characteristics)

PRA 13: 10 (cod, off N.S.); **67:** 31 (cod, Gulf of St. Lawrence)

PRP 14: 5 (artificial spawning & fertilization of salmon); **20:** 3, **22:** 24, **35:** 14, **103:** 14, **111:** 18 (transplanting of salmon); **22:** 15 (canned chum salmon); **42:** 8 (preservation of salmon, for bait); **44:** 18 (eulachon); **52:** 19 (*p*H of salted herring); **53:** 16 (high mortality of herring); **63:** 38 (paste from salmon); **71:** 10 (lecithin & lubricant oil from salmon); **73:** 50, **77:** 97 (amino acids of salmon & herring); **78:** 6 (*Saprolegnia* fungus on sockeye); **80:** 47 (yield from sockeye canning wastes); **111:** 9 (bird predation on herring)

CNG 40 (development of herring)

CVI 11 (essential amino acids of herring & salmon); **16** (by-products from salmon); **17** (synthetic egg-white from cod; amino acids of salmon)

S 180 (maturation & hatching of *Triaenophorus*); **809** (vitamin A re hen egg production)

SS 26 (burbot); **96** (medusae predation on); **136** (hagfish); **162** (cytology of flounder & starfish); **174, 630** (hatching salmon, in gravel); **179** (Gulf of St. Lawrence & arctic waters); **323** (international cooperation for investigation of pelagic); **408** (laying, of shrimp); **418** (fecundity of freshwater fishes); **482, 727, 857, 1258** (Pac. salmons eyed-egg mortality & survival); **594** (monkfish); **1299** (hormones in lobster)

Egmont Bay, P.E.I.

PRA 64: 3 (lobster movements & growth)

Ehrenberg, Andrew Samuel Christopher

J 16: 555 (trimethylamine test for fish grading)

Eisler, Ronald

J 15: 529 (oyster drill feeding habits)

Ekbaum, Ella (*see also* Kuitunen-Ekbaum, Ella)

S 180 (*Triaenophorus* egg maturation & hatching); **202** (Acanthocephala parasites in salmon & flounders)

SS 535, 584 (*Cystidicola* in fishes); **536** (Canadian *Triaenophorus* species)

Elasmobranchs (*see also* Dogfish; Rays; Sharks; Skates)

C 1918–20: 125 (utilizations, including canning); **8:** 275 (slime & intestinal flora)

B 7: 18 (insulin from)

AF 12e (Atl.)

Elbourn, C. A.

SS 1391 (fauna of dead oak wood)

Electricity (*see also* Conductivity, of liquids; Electrofishing; Lamprey, sea; Shock (electrical); Tidal energy; *also* other cognate subjects)

J 7: 55 (sterilizing seawater); **13:** 375, **14:** 145, **17:** 583 (production & detection in sea lamprey); **19:** 895 (electromagnetic effect of tidal currents)

PRC 2: 18 (re barriers for lampreys)

SS 908 (temperature effect on salmonid response to)

Electrofishing

J 14: 153 (current effect on salmonid ova); **19:** 93 (with Pollett apron seine)

B 130: 31 (harpoon for swordfish)

S 313 (advantages); **314, 384** (apparatus); **461** (in N.B. streams); **541** (direct-current apparatus); **559** (back-pack shocker for collecting)

SS 922 (direct-current apparatus)

Electromagnetic radiation sterilization (see Irradiation)

Electrona arctica (see Lanternfish, bigeye)

Electrona crockeri (a lanternfish)

J 19: 271 (NE Pac.)

Electrona thompsoni (*see* Lanternfish, bigeye)

Electrophoresis (The following is not an exhaustive listing of references to this widely applied procedure; *see also* Protein fractions *and* other components to which this procedure is applicable)

J 12: 75 (of cod muscle proteins), 647 (of sturgeon flesh protein)

S 695 (paper: for muscle myogens); **696, 780, 822** (starch gel: for muscle fractions)

SS 884 (electropherograms of young salmons hemoglobin)

Eleginus gracilis (*see* Cod, saffron)

Ellerslie; Ellerslie Brook, P.E.I.

J 15: 1140 (research station), 1403 (trout movements); **16:** 887 (trout production; correction on **17:** 943); **17:** 453 (salmon impoundment effect)

PRA 43: 9 (speckled trout movements & population)

S 435 (brook trout counting fence efficiency); **779** (brook trout transplantation)

SS 977 (new brook trout pond); **1386** (first oyster hatchery)

Elling, Carl Heinz

J 21: 255 (migrating salmonids glycogen & lactate)

Elliptio complanatus (*see* Mussell)

Ellis, Derek Victor

J 13: 591 (Canadian Arctic oceanography); **18:** 1159 (underwater photography of salmonids); **19:** 137 (adult salmon visible migrations)

S 558 (arctic sea-bottom benthos); **600** (Foxe Basin birds distribution & migration); **623** (arctic marine infaunal benthos); **795** (underwater wildlife photography)

SS 1287 (arctic & subarctic intertidal zonation); **1324** (arctic fishes distribution & ecology)

Ellis, Douglas Graham

J 7: 55 (electrical seawater sterilization); **14:** 627 (frozen cod fillet storage); **16:** 33 (Atl. cod muscle protein chemistry); **21:** 115 (water-thawing of cod)

S 781 (stored refrozen cod fillet changes); **801** (myosin-B extracts sedimentation patterns); **834** (water-thawing cod blocks)

Ellis, Marjorie Florence

S 108 (*Ichthyophonus* parasitic on Atl. flounder); **111** (Atl. protozoan fish parasites)

Elms, Clarence Jerome

SS 1415 (ICNAF cod length frequencies statistics)

Elsey, Charles Roy

B 34 (B.C. oysters & industry); **80** (B.C. marine wood-borers)

PRP 15: 3 (Japanese oyster breeds in B.C.); **22:** 19 (oyster larvae distribution); **27:** 6 (oyster feeding rate); **29:** 10 (oyster spawning artificial stimulation); **31:** 6 (seed oyster collecting device); **40:** 8 (oyster larvae distribution, Ladysmith Harbour, B.C.); **99:** 35 (ambergris in B.C. whale)

S 132 (Japanese oyster in B.C. waters)

SS 289 (B.C. Japanese oyster culture); **537** (oyster mantle & gill structure & function); **585** (outline of B.C. oyster culture); **909** (B.C. fisheries resource-use problems)

Elson, Maxine Frances (see also Greenough, Maxine Frances)

J 18: 303 (quality variations in landed cod & haddock)

Elson, Paul Frederick

J 4: 302, 491, **5:** 461 (speckled char development, reactions, activity); **19:** 93 (Pollett apron seine)

B 133 (Atl. salmon re bird predators & control; correction on **J 21:** 1554)

PRA 51: 12 (bird control to increase salmon); **62:** 17 (DDT effects on salmon); **63:** 13 (Atl. salmon overfished?)

S 313, 314 (electrofishing methods & apparatus); **415** (Atl. salmon studies); **506** (size re parr-to-smolt change); **507, 509, 614** (best use of hatchery Atl. salmon); **508, 746** (number of salmon needed to maintain stocks)

SS 706, 908 (Atl. salmon & speckled trout temperature preferences); **743** (planted salmon fingerlings behaviour & survival); **922** (electrical fishing apparatus); **1189, 1360** (Atl. salmon investigation program); **1246** (DDT effects on young salmon); **1388** (merganser control)

Elvers (*see* Eel)

Embassichthys bathybius (*see* Sole, deep-sea)

Embiotocus lateralis (*see* Seaperch, striped)

Embody, Daniel R.

SS 752 (full moon effect on trout fishing)

Embryology and development (*see also* Eggs; Hatcheries; Reproduction; *also* names of organisms)

C 1902–05: 95 (Clupeidae); **1914–15:** 19, **1:** 409 (halibut); **1921:** 115, **4:** 143 (angler); **1:** 11 (lumpfish); **2:** 161 (shad); **4:** 137 (flounder), 413 (*Littorina*), 433 (cunner), 445 (mackerel); **5:** 109, 361 (*Enchelyopus*); **6:** 177 (whitefish)

J 5: 11, **6:** 435 (herring); **5:** 71 (lobster), 111, **21:** 9 (cod); **6:** 252 (teleosts); **8:** 125 (salmonids); **15:** 275 (capelin); **17:** 245 (goldeye); **19:** 867 (yolk utilization, Pac. sardine), 1169 (of *Sebastolobus* species)

B 1: 14 (plaice); **2:** 13 (lumpfish); **3:** 11 (angler); **25:** 13 (haddock); **50:** 6, **53:** 9 (sockeye salmon); **54:** 18 (cod); **62:** 9 (crab); **64:** 11 (smelt); **130:** 12 (swordfish); **140** (Atl. sharks)

PRP 27: 3 (trouts); **73:** 68 (lemon sole)

NRB 4 (various Atl. species); **17:** 65 (capelin)

S 6 (*Sagitta elegans*); **60, 95** (ascidians); **94** (*Choniosphaera cancrorum*); **104** (squid); **116** (sea-urchin); **133, 169** (crabs); **180** (cestodes); **194** (pilchard); **231, 232, 248** (Pac. salmons); **271** (Atl. salmon); **285** (B.C. herring); **401, 599** (*Phocanema*); **515** (sponge); **829** (oyster)

SS 57 (Atl. oyster); **64** (ascidian mouth); **99** (Olympia oyster); **126, 998** (Pac. herring); **127** (lingcod); **179** (Gulf of St. Lawrence & arctic fishes); **738** (Atl. salmon)

Emerita analoga (*see* Crab, sand)

Emery wheel (*see* Flounder, starry)

Emmons, W. F.

SS 331 (*Balanus* operculum movement mechanism)

Emopterus princeps (*see* Sagre, rough)

Enchelyopus cimbrius (*see* Rockling, fourbeard)

Endocrinology (*see* Corticosteroids; Hormones)

Enemies (*see* Predators)

Energy, electrical (*see* Electricity; Irradiation)

Energy, expenditure and reserve, of fishes (*see also* Activity; Maturity; Salmon, sockeye (biology))

J 15: 573 (of fish; correction on **16:** 929)

S 626 (review, re spawning migratory Pac. salmons)

SS 1216 (spawning migratory sockeye salmon)

Energy, heat and light (*see* Heat; Light; Photosynthesis)

Energy, hydroelectric (*see also* Tidal energy)

B 114 (re B.C. salmon research)

Energy, tidal (*see* Tidal energy)

England

SS 661 (fisheries biology & culture)

Engraulis mordax (*see* Anchovy)

Enhydra lutris (*see* Sea otter)

Enneacanthus obesus (*see* Sunfish. banded)

Enophrys bison (*see* Sculpin, buffalo)

Ensilage (*see also* Hydrolysate)

J 18: 93, 113 (liquefied herring as animal feed)

PRA 65: 24 (from cod & haddock offal, as poultry & hog feed)

Ensis directus (*see* Clam. razor (Atlantic))

Enteromorpha linza (*see* Sea-lettuce)

Entomostraca (*see also* Barnacles; Cladocera; Copepoda; Ostracoda; Phyllopoda)

C 1911–14(II): 221 (Georgian Bay); **3**: 179, 331 (Belle Isle Strait)

J 11: 479 (Lakelse L., B.C., abundance & distribution)

S 50 (ecology, feed relations & culture of freshwater); **884** (pelagic plankton of Babine R. lakes system, B.C.)

SS 217 (Ont.); **293** (notes on freshwater)

Entosphenus japonica (*see* Lamprey, arctic)

Entosphenus tridentatus (*see* Lamprey, Pacific)

Entrance Island Lightstation, B.C. (*see also* Lighthouse oceanographic stations, B.C. coast)

PRP 81: 76, **90**: 16, **98**: 6 (daily oceanographic data)

Entry Island, Gulf of St. Lawrence (*see also* Lighthouse oceanographic stations, Atlantic coast)

PRA 42: 4, **51**: 17, **71**: 8 (surface seawater temperatures)

Environment (*see also* Light, reactions to; Limnology; Oceanography; Pollution; Salinity, reactions to; Temperature, reactions to; *also* other cognate subjects)

J 10: 254 (phytoplankton reaction to); **15**: 991 (effect of on fisheries yield), 1103 (affecting salmon production)

S 275, 289 (re Atl. salmon & trout); **484** (variability); **503** (stress implications & assessment, re sockeye salmon); **711** (variability re pink salmon reproduction potential)

SS 305 (re periwinkle growth); **731** (re trout head lengths); **890** (re fishes body form); **1027** (re Atl. salmon migration); **1111** (re scallop fishery); **1263** (re Pac. salmons heredity & morphology); **1331** (study method for); **1389** (effect on Atl. trap cod quality)

Enzymes (*see also* Lipases; Lipoxidase; Quality; Trimethylamine oxide)

C 4: 103 (of clam bacteria)

J 1: 145 (digestive); **3**: 473, **5**: 217, **10**: 590 (proteolytic for leather bate); **4**: 367, **5**: 187, **6**: 368, **7**: 561, **8**: 195 (trimethylamine oxide reducing); **5**: 217, **7**: 513, 552 (tryptic); **7**: 94, **11**: 529 (thiaminase); **7**: 552 (peptic); **9**: 393 (lipoxidase); **12**: 637, **13**: 869 (for fish & mammal liver & viscera hydrolysate production); **14**: 65 (in sewage, soils, river & marine sediments & waters), 771 (antibiotics action on bacterial); **16**: 43 (in frozen flesh lipid hydrolysis), 561 (treatment of stickwater), 685 (in condensed solubles production), 747 (in cod muscle proteolysis), 755 (lingcod flesh lipase activity), 791 (dogfish flesh urease); **17**: 371, 603 (action on lingcod muscle phosphorus compounds); **18**: 93, 113 (proteolytic for herring liquefaction as animal feed), 349 (salmon organs nucleoside phosphorylase); **19**: 1095 (cod tropomyosin digestive)

PRA 18: 11, **21**: 9 (from caeca for leather bate); **66**: 16 (action on fat during cod salting); **73**: 9 (action on skin for protein hydrolysate)

PRP 3: 3, **15**: 5 (action on oil of cold-stored fish); **5**: 7, **13**: 3, **33**: 13, **69**: 66 (proteolytic in flesh spoilage); **22**: 8 (liver oil liberation by pepsin); **50**: 4 (lipoxidase effect on vitamin A oil); **71**: 5, **75**: 51, **80**: 47 (visceral tryptic for commercial uses); **75**: 43 (for producing peptones commercially); **98**: 3 (for freeing & destroying ribose re flesh browning inhibition); **103**: 16 (for solubilizing shrimp wastes); **111**: 23 (for solubilizing herring)

CVI 6 (lipoxidase action on vitamin A)

S 23, 25, 82 (arginase in tissues); **70** (of fish bile); **400** (muscle riboside hydrolases); **517** (review re biochemical significance); **526, 534, 568, 570, 606, 607, 640** (lingcod muscle nucleoside phosphorylase); **569** (lingcod muscle lipase); **601** (for overcoming herring solubles gelling); **633** (Atl. cod muscle adenosinetriphosphatase); **749** (steelhead trout phosphatase); **772** (bacterial hexose oxidase); **820** (rainbow trout phosphoglucomutase); **865** (cyclic phosphates esterase); **866** (steelhead trout tissues glycolytic)

SS 287 (role of proteolytic in herring decomposition); **448, 449, 528** (in bivalve crystalline styles); **719** (bacterial trimethylamine oxidase); **924** (re fruit flesh browning); **1223, 1252** (tricarboxylic acid cycle in marine bacterium); **1322** (endogenous proteolytic); **1330, 1358, 1365, 1366** (coenzyme B_{12}); **1373** (for nucleotides preparation)

Eopsetta jordani (*see* Brill)

Ephemerida (*see* Mayflies)

Epigeichthys atropurpureus (*see* Prickleback, black)

Epinephelus morio (*see* Grouper, red)

Epizoism (*see also* Commensalism)

S 563 (ciliate on skate); **648** (re Atl. oyster disease)

Equilibrium catch or yield (*see* Yield, equilibrium)

Equipment; Apparatus (Too numerous for collected references; they are in most cases implied or indicated in references under index headings pertaining to their applications; *see* Patents)

Erie, Lake (*see also* Great Lakes)

C 1921: 73, 87 (ciscoes)

J 19: 1013 (*Leucichthys* species morphometry)

PRC 1: 3 (sea lamprey incidence & effect), 18, **2:** 14 (lamprey control); **1:** 28 (smelt canning); **2:** 5 (gear development), 53 (fish grading equipment)

SS 916 (nylon gill nets); **1293** (midwater trawl for smelts)

Erignathus barbatus (*see* Seal, bearded)

Erilepis zonifer (*see* Skilfish)

Erimyzon sucetta (*see* Chubsucker, lake)

Errors (procedural)

J 16: 73 (in mortality estimates)

S 583 (re assessment of data accuracy & precision)

SS 621 (sampling); **1258** (in assessing Pac. salmon egg survival)

Escalator shellfish harvester (*see* Dredge)

Escapement (*see also* cognate subjects)

J 15: 1007 (of Skeena R. sockeye salmon); **16:** 853 (pink & chum salmon, Hooknose Creek, B.C.)

Eschrichtius gibbosus; E. glaucus (*see* Whale, gray)

Escolar (*Lepidocybium flavobrunneum*)

B 155: 276 (full description)

Eskimo

CAG 3 (instructions re walrus catches (in Eskimo language))

SS 119 (James Bay)

Esox americanus americanus (*see* Pickerel, redfin)

Esox americanus vermiculatus (*see* Pickerel, grass)

Esox lucius (*see* Pike, northern; Pike, silver)

Esox masquinongy (*see* Maskinonge)

Esox niger (*see* Pickerel, chain)

Esters (*see also* Acids, fatty; Glycerides; Lipids; Oils and fats; Spermaceti; etc.)

J 19: 605 (methyl, from cod oil fatty acids)

B 59, 89 (of and from marine animal oils; *see* their indexes)

S 449, 458, 463 (hydrogenation kinetics); **479, 687, 688** (methyl, from marine oils); **629** (decomposition of dicarboxylic during gas chromatography); **845** (methyl, hydrogenation in ethanol); **804, 811, 824, 825, 833, 861, 883** (gas–liquid chromatography of fatty-acid methyl)

Estuaries (*see also* Dilution effects; Inlet and fiord oceanography; Gulf of St. Lawrence; *also* under names of rivers)

J 5: 164 (re plankton occurrence & retention); **15:** 1403 (trout movement in & out of Ellerslie Brook, P.E.I.); **17:** 91 (analogy to, in subarctic Pac.), 377 (biological survey, Kennebecasis Bay), 743 (Passamaquoddy Bay currents)

S 20 (tidal oscillations); **345** (effects on sea); **471** (St. Lawrence R.); **642** (water structure, entrainment, transport); **868** (planting brook trout in)

SS 34 (diatoms in N.B.); **688** (entry method of stickleback); **1271** (water circulation re pollution disposal); **1311** (analogy to, in subarctic Pac.)

Etheostoma blennioides (*see* Darter, greenside)

Etheostoma caeruleum (*see* Darter, rainbow)

Etheostoma exile (*see* Darter, Iowa)

Etheostoma flabellare (*see* Darter, fantail)

Etheostoma microperca (*see* Darter, least)

Etheostoma nigrum (*see* Darter, Johnny)

Ethology
  J 15: 391 (Pac. salmon)

Etmopterus princeps (*see* Sagre, rough)

Etrumeus sadina; E. teres (*see* Herring, Atlantic round)

Eualus (shrimps)
  J 19: 1167 (range extension, NE Pac.)
  S 635 (range extension, NE Pac.)

Eubalaena glacialis (*see* Whale, black right)

Eubalaena sieboldi (*see* Whale, north Pacific right)

Eucalia inconstans (*see* Stickleback, brook)

Eudistylia vancouveri (tube worm) (*E. gigantea*) (*see also* Polychaeta)
  C 1: 441 (re Alaskan *Eudistylia*)
  J 9: 164 (vitamin B_{12} in)
  PRP 92: 16, **95**: 52, **97**: 8 (octanoic acid & octanol in)
  S 13 (pentose in); **371, 380** (fatty acids & *n*-octanol in)

Eulachon (*Thaleichthys pacificus*) (oolichan; oulachon; candlefish)
  J 14: 655 (B.C. freshwater distribution); **21**: 1333 (marine life history)
  B 37: 146, **59**: 412, **89**: 68, 346 (oil characteristics); **64** (B.C. fishery); **68**: 99, **68R**: 122 (full description)
  PRP 40: 17 (description; life history); **44**: 18 (spawning); **49**: 18, **56**: 6 (catch statistics); **52**: 24 (canning); **72**: 36, **79**: 35, **95**: 35 (predators); **95**: 35 (eggs in dogfish stomachs)
  CNG 64: 49 (productive capacity)
  S 453, 851: 55 (B.C. fishery)
  SS 1208: 35 (full description)

Eumesogrammus praecisus (*see* Snakeblenny, fourline)

Eumetopias jubata (*see* Sea lion, northern)

Eumicrotremus derjugini (*see* Lumpsucker, leatherfin)

Eumicrotremus orbis (*see* Lumpsucker, Pacific spiny)

Eumicrotremus spinosus (*see* Lumpsucker, Atlantic spiny)

Eumicrotremus terrae-novae (*see* **B 155**: 371 (footnote))

Eunicidae
  S 447 (B.C. record of *Epidiopatra*)

Euphausiacea ("red feed") (*see also* Copepoda; Plankton; Zooplankton)
  C 8: 181 (W Canadian)
  J 17: 235 (as redfish feed)
  B 15: 7 (as salmon feed)
  PRP 11: 24, **23**: 17, **39**: 21, **42**: 3, **47**: 14, **52**: 9, **79**: 30, 35, **83**: 27 (role as feed of whales & various fishes); **50**: 14 (causing belly-burn in herring); **52**: 19 (re canned herring quality); **86**: 24 (as freshwater "red feed"); **107**: 3 (NE Pac. distribution)
  S 703 (*Euphausia pacifica* sterol content)

Eupomotis gibbosus (*see* Sunfish, pumpkinseed)

Europe
  SS 627, 628, 629, 661 (fisheries biology & culture)

Eurypharynx pelecanoides (*see* Gulper, pelican)

Eutectic
  PRP 24: 18 (glaze for frozen fish); **35**: 18, **67**: 36 (ices for cooling fish); **35**: 24

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

(patent on eutectic ices); **62**: 17, **74**: 23 (ice for railway refrigerator cars); **94**: 3 (brine for freezing fish)

Euthynnus alletteratus (*see* Tuna, little)

Euthynnus pelamis (*see* Tuna, skipjack)

Evans, John William
S 600 (Foxe Basin, N.W.T., birds distribution & migration)

Evaporation from the sea (*see also* Oceanography; Weather; Wind)
J 14: 464 (mathematical treatment); **15**: 434 (effect on sea heat budget)

Evolution (*see also* Fauna, relict)
SS 500 (rainbow trout)

Evotomys (*see* Mouse, red-backed)

Excretion (*see also* Slime)
C 6: 341 (dogfish urine creatine)
S 119 (urea physiological significance); **542** (of N compounds via gills & excreta)

Exercise (*see* Activity)

Exhibits (*see* Station, Board)

Exotics (*see also* Transplantation)
J 21: 1155 (some B.C. Mollusca), 1325 (*Mysis relicta* in Kootenay L., B.C.)
B 127: Fig. 3 (accidental, of Japanese *Sargassum* seaweed)
PRP 48: 17, **61**: 3 (accidental, of Japanese little-neck clam)
CNG 44: 12 (accidental, of Japanese *Sargassum*)

Expansion coefficient
J 14: 633 (water to ice, for determining freezing point of fish flesh)
B 59: 154, **89**: 147 (of fish oils)
PRP 32: 17, **36**: 16 (of fish body oils); **61**: 21, **76**: 85 (water to ice, for determining freezing point of fish flesh); **63**: 43 (of fish liver oils)
SS 698, **728** (re bulk measurement of fish oils)

Expeditions (*see* "Calanus" Series; Canadian Fisheries Expedition; Hudson Bay; Surveys, fishery)

Exploitation, and rate of (*see also* names of organisms *and* of international commissions)
J 5: 43 (catch per unit effort relation); **11**: 580 (in stock & recruitment), 827 (Great Slave L. trout); **12**: 187 (winter flounder; correction on **12**: 942); **13**: 219 (Atl. salmon), 547 (Lake Ontario whitefish); **14**: 669 (re marine fisheries management), 683 (optimum level & economics of); **15**: 1371 (cod, haddock); **20**: 257 (effect on population), 647 (re interspecific competition); **21**: 1 (sustained yield from fluctuating environment), 727 (maskinonge), 905, 1019, 1329 (Pac. salmons), 1051 (Pac. cod), 1245 (Pac. salmon population biology model)
B 107 (Great Slave L. fisheries; correction on **J 14**: 997)
PRP 61: 8, **65**: 77, **70**: 13, **94**: 5 (Skeena R. sockeye salmon); **89**: 84, **109**: 16 (Queen Charlotte Is. crab); **103**: 8 (Strait of Georgia cod); **104**: 38 (Cultus L., B.C., cutthroat trout); **105**: 11 (Union Bay, B.C., lemon sole)
S 411 (B.C. herring); **453** (re abundance & distribution of B.C. marine resources); **765** (of E Canada arctic seals re population dynamics); **862** (1959 Fraser R. pink salmon runs)

Exploits River, Nfld.
J 12: 691 (pulpmill pollution survey; correction on **J 14**: 997)

Exploration; Prospecting; Scouting (*see also* "Calanus" Series; Canadian Fisheries Expedition; Hudson Bay; Surveys, fishery)
J 17: 211, 735 (for Atl. herring)
B 108 (Danish seine for Nfld. witch & plaice); **111** (Atl. herring); **120** (redfish); **135** (Atl. scallops)
PRA 67: 14 (redfish)
PRP 98: 16, **100**: 19, **101**: 3 (shrimp)
CJG 2, **3**, **4** (for haddock, redfish, etc. off Nfld.)
CNG 16 (for herring near Queen Charlotte Is.); **17** (albacore off B.C.); **26** (herring by echo sounding); **28**, **31**, **35**, **39**, **55** (shrimps)
SS 928 (redfish); **1134** (herring around Nfld.)

Explosions, effect of
C 1902–05: 21 (dynamite, re fish & lobsters)

PRP 51: 20 (for shipworm control); **52**: 11 (gunfire; dynamite); **72**: 36 (for harbour seal control); **111**: 38 (biological, when blasting Ripple Rock, B.C.)
S 144: 61 (killing sturgeon); **241** (danger of $AgNO_3$ crystals with alcohol)

Exponential functions and derivatives
B 119: 271 (table of)

Expression of eggs (*see* Hatcheries)

Extractor
S 734 (liquid–liquid)

Extracts; Extractives
C 7: 439 (effect of skate skin, on skate circulation)
J 12: 637 (composition, of fish & mammalian liver); **13**: 791 (acetone–water extraction method); **16**: 63 (analysis for, in cod muscle); **20**: 909, **21**: 703 (of Atl. cod fillets)
SS 787 (Irish moss)

Exuviation (*see Moulting*)

Eye (*see also* Light, reactions to)
J 15: 815 (Pac. salmon: morphology & sensitivity); **18**: 259 (Atl. salmon: internal measurements); **19**: 1161 (adipose eyelid morphology & optics); **20**: 287 (retinal cues for migratory movement); **21**: 591 (retinomotor cycles of a teleostean), 1089 (reflectivity of chorioidal tapeta)
SS 573, 574 (supposed "three-eyed" haddock); **1149** (physiology of)

Eye, onion (*see* Grenadier, roughhead)

F

Fagerlund, Ulf Henrik Mathias
J 17: 597 (marine sterol synthesis); **20**: (sockeye salmon survival after advanced gonad development; correction on **21**: 1553), **20**: 1435 (sockeye anaesthetic), 1457 (migrating salmon olfactory perception)
PRP 92: 16, **95**: 52, **97**: 6 (marine tubeworm fatty alcohol & acid); **98**: 10 (olfactory repellent action on migrating salmons)
S 371, 380 (tubeworm octanol & fatty acids); **406, 433, 470, 475, 498, 546, 619, 637, 659, 703** (marine sterols); **444, 846** (salmons olfactory perception); **640** (salmon plasma hormones)

Fallfish (*Semotilus corporalis*)
J 16: 817 (Miramichi R., N.B.)
SS 119 (James Bay region)

Falls obstructing fish migration (*see* Migration; Obstructions to migration)

Farmer, Ernest Harold
S 349 (fatty acid unsaturation re refractivity)

Farming, fish (*see* Hatcheries; Management; Pond culture)

Farris, David Allen
J 13: 507 (aquarium sardines weight–length re diet)

Fasmer, Helge
SS 399 (*Anthophiura* brittle-star genus)

Fat (Except for a following heading Fatness as referring to a physiological condition of living fish, references to fats as constituents of, or products from organisms, will be found under the several subdivisions of the heading Oils and fats. *See also* Lipids)

Fatigue (*see* Activity; Glycogen; Lactic acid)

Fatness as condition index (for oysters *see* Condition)
J 2: 401, **15**: 1259 (Atl. herring re feed & season); **4**: 461 (specific gravity method for B.C. herring)
B 111: 177 (Atl. herring)
PRA 6: 7 (Atl. salmon); **34**: 17 (Atl. herring)
PRP 37: 19, **45**: 12 (B.C. herring)

Fatty acids (*see* Acids, fatty)

Fauna (invertebrate) (In addition to the following Fauna headings, *see* Arctic,

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Canadian; Distribution; *also* classifications (including Plankton; Zooplankton) and individual species of aquatic, terrestrial, and winged invertebrates; *also* names of localities and bodies of water)

Fauna (vertebrate) (In addition to certain of the following Fauna headings, *see* Arctic, Canadian; Distribution; Fishes, freshwater; Fishes, lists of; *also* classifications and individual species of aquatic, terrestrial, and winged vertebrates; *also* names of localities and bodies of water)

Fauna, arctic (in general, and lists of) (*see also* note under Fauna)
B 94 (& subarctic freshwater vertebrates)
S 361 (& subarctic re marine ecology); **623** (infaunal marine benthos)
SS 1288 (benthos)

Fauna, Atlantic marine invertebrate (in general, and lists of) (*see also* note under Fauna (invertebrate); *also* list of titles in the Canadian Atlantic Fauna Series)
C 1902–05: 31, **1906–10**: 37, 45, 69 (Canadian Atl. coast); **1917–18**: 229 (check list of); **2**: 97 (upper temperature tolerances); **3**: 331 (Belle Isle Strait)
J 8: 314 (thiaminase in)
S 5 (notes on Passamaquoddy Bay); **278** (of P.E.I. ponds); **587** (of Minas Basin); **841** (summary of Maritimes)
SS 170 (vertical distribution of intertidal)

Fauna, Atlantic marine vertebrate (in general, and lists of) (*see* note under Fauna (vertebrate); *also* Fishes, lists of; *also* names of marine mammals)
B 155 (descriptions of Canadian Atl. coast fishes)
AF 12 (lampreys; sharks, rays, chimaeroids)

Fauna, bottom (*see* note under Fauna; *also* Flatfishes; Groundfish; Limnology; Shellfish *and* other kinds of bottom fauna)

Fauna, freshwater invertebrate (*see* note under Fauna (invertebrate); *also* Limnology; Plankton; Zooplankton)
C 1: 127 (Sask. lakes); **5**: 381 (Man. lakes)
J 6: 133, **9**: 417 (Cowichan L. & R., B.C.); **8**: 383 (Charlotte Co. lakes, N.B.); **9**: 204 (Cultus L., B.C.); **10**: 486 (Great Slave L.); **11**: 637 (Port John L., B.C.); **12**: 487 (Ungava Crater & neighbouring lakes), 499 (Skeena R. system lakes); **13**: 515 (re B.C. lake fish production); **14**: 1 (re lake size); **15**: 203 (Heming L., Man.); **16**: 147 (Ont. streams); **17**: 591 (dredge for burrowing forms), 607 (Lac la Ronge, Sask.); **19**: 1105 (relict, of Greiner L., N.W.T.)
B 42 (Kamloops area lakes, B.C.); **56** (Okanagan lakes, B.C.); **72, 78** (Great Bear, Great Slave & Athabaska lakes); **95** (review of *Triaenophorus* problem in Canadian lakes)
PRA 43: 3 (Crecy L., N.B.)
PRP 8: 6, **66**: 12, **67**: 23, **68**: 55, **69**: 70, **70**: 10, **72**: 28, **74**: 6, 9, **78**: 6 (Skeena R. system lakes)
S 163 (Jones L., B.C.); **197** (Shuswap L., B.C.); **198** (Lake Jesse, N.S.); **228, 278** (brackish lagoons); **242** (Potter's L., N.B.); **297** (Crecy L., N.B.); **763** (re trout in fertilized lake)
SS 288 (Garibaldi L., B.C.); **358** (Lake Winnipeg benthos); **859** (profundal bottom fauna); *see also* under author Wailes, G. H.

Fauna, freshwater vertebrate (in general, and lists of) (*see* note under Fauna (vertebrate); *also* Fishes, freshwater; Fishes, lists of)

Fauna, marine (in general) (*see also* note under Fauna)
SS 139 (Canadian coasts); **269** (factors controlling tidepool biota); **324** (rational protection methods for Pac.); **428** (Nanaimo vs. San Juan Archipelago regions); **745** (B.C., historical)

Fauna, marine vertebrate (*see also* Arctic, Canadian; Fauna, marine in general; Fishes, lists of; *also* classifications and individual species of fishes and marine mammals; *also* specific localities and bodies of water)
B 68, 68R (descriptions of Canadian Pac. coast fishes)
B 155 (descriptions of Canadian Atl. coast fishes)

Fauna, Pacific marine invertebrate (in general, and lists of) (*see also* note under Fauna (invertebrate); *also* list of titles in the Canadian Pacific Fauna Series)

C 1911–14(I): 51 (iodine content of)

J 1: 481 (as herring feed); **9:** 164 (vitamin B_{12} content of)

SS 452 (checklist of); **745** (B.C., historical)

Fauna, Pacific marine vertebrate (in general, and lists of) (*see* note under Fauna (vertebrate); *also* Fishes, lists of; *also* names of marine mammals)

B 68, 68R (descriptions of Canadian Pac. coast fishes)

Fauna, relict

J 19: 1105 (Greiner L., Victoria Is., N.W.T.)

SS 259 (re ecology); **1228** (2 crustaceans re Pleistocene glaciation)

Fauna, terrestrial (*see* note under Fauna; *also* Mammals; Predators, terrestrial; land animals; *also* individual species, e.g. Bear; Frogs; Snakes)

Fauna, winged (*see* Birds; Insects; Poultry; Predators, bird)

Favorite, Felix

J 18: 311 (B.C. & Washington coastal surface waters oceanography)

S 860 (subarctic Pac. oceanography review re salmon)

Fecundity (*see* Eggs; Reproduction)

Fee, Archibald Roderick

C 3: 13 (Departure Bay, B.C., Isopoda)

SS 277 (dogfish colon & intestinal valve)

Feed (*see* headings relating to ingestion of food by organisms other than man; e.g. Feed studies; Feedstuffs; Predators; for man, *see* Food)

Feed studies (*see also* Feedstuffs; Predators; *also* names of organisms)

C 1901: 26 (*Mya*), 49 (sea-urchin); **1915–16:** 40 (coho salmon); **1917–18:** 80 (muttonfish); **1921:** 87, **6:** 239 (ciscoes); **1:** 8 (lumpfish), 287 (Pac. fishes); **2:** 182, 228 (shad), 402 (sockeye salmon), 456 (cunner); **3:** 269 (chinook salmon); **4:** 197 (Jasper Park fishes), 421 (*Littorina*); **5:** 443, **6:** 200, 445 (whitefish); **5:** 464 (pumpkinseed); **7:** 179 (Lake Winnipeg fishes), 245 (pilchard)

J 1: 477, **16:** 283 (B.C. herring); **2:** 114, **4:** 392, **5:** 365, **19:** 981 (Atl. herring); **2:** 299, **3:** 323, **4:** 48, 309, **12:** 781, **14:** 729 (birds); **2:** 485 (lobster), 499, **6:** 90, **15:** 1213 (Atl. salmon); **3:** 12 (Pac. fishes), 20 (sucker), 20, **5:** 183, 448, **6:** 90, 137, **7:** 183, **8:** 207, **9:** 169, **11:** 5, **16:** 269, 321, **17:** 541, **18:** 203, 423, **19:** 715, **21:** 133 (various trouts); **3:** 450 (sockeye salmon); **5:** 84 (starfish), 131, **8:** 207, **20:** 279, 749 (whitefish); **5:** 293, **9:** 204 (Cultus L., B.C., fishes); **5:** 293 (predators of lake sockeye salmon), 293, **8:** 103 (squawfish); **6:** 419 (Baffin Is. coastal *Themisto*), 421, **10:** 560, **14:** 878, **17:** 762 (various seals); **7:** 22 (killifish & white perch), 490 (shellfish); **8:** 347 (maskinonge); **9:** 1, **10:** 326, **13:** 843 (arctic char); **10:** 512, **12:** 768 (Great Slave L. fishes); **11:** 535 (haddock; correction on **14:** 997); **12:** 487 (fishes of Chubb Crater vicinity, Que.), 499 (fishes of Skeena R. drainage region), 768 (inconnu), 930, **20:** 417 (burbot); **14:** 890, **15:** 1383, **21:** 215 (Atl. cod); **14:** 899, **17:** 235 (redfish); **15:** 529 (oyster drill feeding habits); **17:** 541 (hybrid trout), 647 (mutant pike), 655 (pink salmon fry), 929 (dwarf coastrange sculpin); **18:** 203 (redside shiner); **19:** 815 (gray whale), 851 (coho & chinook salmons); **20:** 105 (2 dace species), 1267 (pollock), 1397 (bigmouth buffalo); **21:** 757 (re guppy fecundity), 861 (blue shark), 1083 (lack of predation on Pac. lamprey)

B 1: 18 (plaice); **2:** 10 (lumpfish); **3:** 15 (angler); **4:** 10 (muttonfish); **25:** 20 (haddock); **30:** 15 (crabs); **42:** 3 (trout); **55:** 15 (mergansers), 32 (B.C. freshwater fishes); **54:** 21 (lingcod); **56:** 42 (whitefish); **60:** 11 (oysters); **65** (chinook & coho salmons); **68, 68R** (Canadian Pac. marine fishes); **78:** 15 (whitefish & suckers); **79:** 7 (brook trout); **82:** 8 (coregonine fishes); **98:** 13 (beluga); **116** (merganser); **118** (ringed seal); **130**

(swordfish); **132**: 25 (pilot whale); **137** (seals & walrus); **146** (fur seal, sea lion & harbour seal); **155** (Canadian Atl. marine fishes)

PRA 6: 7 (Atl. salmon); **11**: 12 (hake); **15**: 10 (haddock); **22**: 12, **72**: 3 (Atl. cod); **37**: 14 (oyster drill); **52**: 3 (winter flounder); **61**: 5 (seals); **63**: 3 (green crab); **67**: 19 (eels)

PRP 4: 3, **22**: 3 (oceanographic conditions re feed cycle); **4**: 9 (shrimps); **6**: 9 (clams); **11**: 10, **13**: 18, **19**: 11, **87**: 39 (trouts); **11**: 18, **99**: 3 (crabs); **11**: 24, **48**: 3 (pilchard); **13**: 14 (conditioning fish to feed by sound); **19**: 3 (squawfish); **21**: 14 (feed chain re young salmon); **23**: 17, **30**: 3, **39**: 21, **50**: 14 (Pac. herring); **27**: 6 (oyster feeding rate); **42**: 3, **47**: 14, **53**: 3, **103**: 3 (chinook salmon); **52**: 9, **71**: 3 (albacore); **55**: 10, **112**: 7 (coho salmon); **66**: 12, **67**: 23, **68**: 55, **69**: 70, **70**: 10, **72**: 28, **74**: 6, 9, **78**: 6 (fishes of Skeena R. lakes system); **72**: 36 (harbour seal); **79**: 30, **83**: 27 (whales); **86**: 18 (young Pac. salmons); **95**: 35 (dogfish); **109**: 6 (pomfret), 9 (steelhead trout in ocean); **112**: 18 (northern sea lion); **113**: 10 (daggertooth)

CAG 2 (walrus)

CJG 2 (redfish)

CNG 12: 3, **17**: 17 (albacore)

NRB 6: 29 (haddock); **9** (trout); **14**: 84 (Atl. cod); **15**: 48 (spiny dogfish); **17**: 128 (capelin)

S 50 (Entomostraca); **73** (Pac. clams); **98** (Pac. herring & sockeye salmon); **112** (in Strait of Georgia); **124**, **295** (sockeye); **140** (Atl. salmon & trout); **141** (in pond culture); **148** (fish predators of Pac. salmon); **166** (selection by ciliates); **185** (*Daphnia pulex*); **224** (ducks & coots); **272** (haddock); **346** (sardines); **517** (review of biochemical significance to fish); **654**, **655**, **656**, **657**, **658**, **769**, **859** (salmons in NE Pac.); **858** (organic suspended matter in marine feed cycle); **864** (animal retention of triglyceride fatty acids pattern)

SS 111 (beluga); **122** (Pac. halibut); **176** (young sockeye); **237** (diatoms–fish marine feed cycle); **358** (Prairie Provinces fishes); **395**, **480** (chinook salmon); **409** (ciscoes); **430** (pilchard); **453**, **1096** (fur seal); **461** (littleneck & butter clams); **524** (fish daily feed consumption estimation); **597** (merganser); **732**, **764**, **778** (B.C. ducks); **975** (guillemots); **1230** (American eel); **1247** (Atl. cod); **1268** (Nfld. murres); **1331** (Atl. salmon)

Feeding (*see* Feed studies; Feedstuffs)

Feedstuffs (*see also* Autolysate; Feed studies; Meals, marine animal and freshwater fish; Mink; Poultry feed; Ruminant; Solubles, condensed; Stickwater)

J 7: 94 (detrimental thiaminase in fish for foxes), 513, 563 (amino acids in protein); **8**: 117 (salmon viscera for young salmonids); **13**: 869 (cod & haddock viscera); **18**: 93, 113 (from "liquefied" herring)

B 59: 319, **89**: 281 (fish oils vitamins A & D for poultry, cattle, fox & mink); **92** (freshwater fish for mink)

PRA 5: 14, **9**: 6, **10**: 8 (fish meal for livestock); **48**: 4, **49**: 5, (cod liver residue for farm animals); **65**: 24 (cod & haddock offal ensilage for poultry & hogs)

PRP 9: 3 (for sockeye salmon in ponds); **23**: 14, **80**: 52 (for hatchery trout & salmon); **110**: 13 (dogfish); **25**: 13, **35**: 7, **38**: 7 (herring & pilchard oil for poultry & stock); **58**: 3 (dogfish & shark liver oil for stock)

CNS 1–11 inclusive, **13** (landings of B.C. trawled fish for animal feed, 1954–63)

S 453: 37, **851**: 49 (B.C. scrapfish for fur farms)

SS 427 (for sockeye hatcheries); **979** (antibiotics for mink); **1204** (groundfish visceral meal for farm stock)

Fences, counting (*see also* Guiding; Marking; Migration; Tagging)

C 5: 57 (retaining-trap design)

J 6: 217 (design for salmon)

B 58: 24 (barrier & trap design); **99** (design for Atl. salmon)

S 435 (efficiency of year-round operation); **492** (of netting)

SS 843 (trap design)

Ferguson, Robert Gilmour

J 15: 607 (freshwater fishes temperature preference)

Fermentation, digestive (*see* Ruminant feed)

Ferrier, Kenneth

CPO 1960-13 *(oceanographic conditions between Juan de Fuca Strait and ocean weathership)*

Fertility of fish *(see* **Eggs; Reproduction;** *also* names of fishes*)*

Fertility of waters *(see* **Fertilization; Limnology; Productivity; Oceanography***)*

Fertilization of eggs *(see* Eggs; Hatcheries; Reproduction*)*

Fertilization of waters *(see also* Nutrients *(in natural waters))*

J 1: 67 *(results from cow manure)*; **5:** 138 *(algae)*; **7:** 248 *(chemical, for stream algae)*; **12:** 210 *(chemical, for trout-angling lakes)*; **16:** 887 *(through drainage from farm fertilizers; correction on* **17:** 943*)*

PRA 3: 7 (with herring meal); **4:** 14 (effect on dissolved oxygen); **17:** 10, **36:** 6, **43:** 3 (for trout)

PRP 24: 21 (for promoting algal growth)

S 297, 341, 358, 763 (for Creey L., N.B., algae)

SS 441 (experimental fish ponds); **508** (re dissolved oxygen content)

Fertilizer from fishery products *(see also* Ensilage; Hydrolysate; Meals, marine animal and freshwater fish; Solubles, condensed*)*

C 1901: 60 (sardine); **1914–15:** 25 (B.C. kelps); **1918–20:** 125 (Atl. dogfish & other selachians)

PRA 73: 10 (from skins after glue extraction)

PRP 103: 16 (from shrimp wastes)

NSB 10, 11: 18 (Nfld. crude fish meal)

SS 225 (starfish)

Fibre, crude *(see* Carbohydrates*)*

Fibres, synthetic (for nets and lines) *(see also* Net, gill*)*

J 16: 142, **17:** 1085 (cotton vs. nylon efficiencies); **20:** 195 (nylon in African lake fishery)

PRP 101: 16 (nomenclature system for nylon twine sizes); **103:** 6, **106:** 20 (kuralon vs. cotton strengths)

CCG 2: 1 (nylon favoured for lake fisheries)

CNG 51 (Canadian vs. British vs. Japanese nylon twines); **54** (monofilament nylon web tests); **66** (continuous-filament polypropylene)

CVI 18 (terylene & nylon in drum-seine tests); **19** (nylon & other, for salmon gill nets)

S 319 (nylon vs. cotton in Lake Winnipeg)

SS 962 (nylon vs. cotton gill nets); **1387, 1394** (testing methods)

Filefish, fringed *(Monacanthus ciliatus)*

B 155: 409 (full description)

Filefish, orange *(Alutera schoepfi)* (sunfish)

J 16: 513 (N.S. record)

B 155: 407 (full description)

S 226 (in Halifax harbour)

Filefish, planehead *(Monacanthus hispidus)*

J 16: 513 (inshore N.S. records)

B 155: 410 (full description)

Filefish, scrawled *(Alutera scripta)* (unicorn fish)

B 155: 408 (full description)

Fillets; Filleting (The following list of references is not exhaustive; many references dealing with flesh in the form of fillets, or flesh later converted into fillets, will be found under cognate headings, e.g. Antibiotics; Denaturation; Composition; Dips; Drip; Extracts; Flesh; Freezing; Preservatives; Rancidity; Refrigeration; *also* under names of fish commonly filleted)

C 8: 301 (cod: frozen)

J 3: 1 (cod: smoking of); **5:** 148 (various preservatives for); **7:** 370, 378, 430, 580 (cod: spoilage bacteria population & effects), 421, 461, 528, 536 (cod: nitrite preservative effects), 449 (cod: trimethylamine formation vs. palatability); **8:** 111 (cod & haddock: storage near 32°F), 309 (cod): trimethylamine oxide content), 325

(cod: salt denaturation); **12**: 329 (haddock: quality values & standards); **13**: 33 (cod & haddock: quality re care of gutted fish), 129 (plaice: analysis & storage of frozen), 159 (plaice: re "jelly" condition of flesh in the fish), 207 (from fish treated with nitrite ice & dips), 291 (from fish before & after gill removal), 559 (cod: spoilage assessment in nitrite-treated), 569 (redfish: quality of stored frozen), 866 (from "bilgy" fish); **14**: 627, 925 (cod: effect of storage temperature on frozen), 773 (cod & haddock: trimethylamine values of nitrite-treated), 775 (cod & haddock: bacterial spoilage odours), 831, 975 (nematode incidence in cod, etc.); **15**: 517, 521 (haddock: quality from variously treated fish), 537 (cod: illumination for candling for nematodes), 695 (redfish, cod & haddock: abnormal flesh pigmentation), 701, 717, 729 (cod & haddock: quality grading); **16**: 1 (preservation with antibiotic in tropics), 13, 21 (cod & haddock: bacterial spoilage odours), 33, 43, 53, 63 (protein chemical structure), 63 (cod: extractives analysis), 223 (cod: seasonal differences in trimethylamine content), 747 (cod: proteolysis in), 755 (lingcod: lipase activity in); **17**: 1 (cod: time & temperature effects on cooking), 81 (whitefish: harmlessness of *Triaenophorus* in), 510 (cod: harmlessness of *Phocanema* in); **18**: 137 (cod: slicing for detection & removal of nematodes), 295, 303 (cod & haddock: seasonal quality), 893 (shad: proximate composition); **19**: 169 (Pac. cod & lingcod: fat hydrolysis in frozen), 1039 (cod: protein concentrate from); **21**: 101, 539, 1397 (cod: polyphosphate treatment of frozen), 577 (cod: palatability & cooking, from frozen fish), 703 (cod: seasonal composition variations), 1345, 1361 (cod: re rancidity)

B 20 (haddock: production, packaging, etc. of frozen); **100**: 16 (Atl. fishes: sanitation, processing, preservatives, etc.); **124**: 12, **138** (antibiotic preservative dips for)

PRA 1: 13 (skinning device); **2**: 4 (brine freezer for), 7, **41**: 4 (cold storage changes); **4**: 6, **9**: 4, **12**: 7, 10, **13**: 3, 5, **34**: 10, **36**: 19 (smoking of); **5**: 10 (shipping frozen); **12**: 7, **13**: 5 (drying before smoking); **14**: 8 (canning of mackerel); **24**: 3, **26**: 3 (acid dips for fresh cod); **30**: 10, **38**: 10, **41**: 10 (keeping quality of fresh); **35**: 20, **36**: 10, **40**: 6, **57**: 9 (cutting table for); **36**: 19 (keeping quality of smoked cod); **39**: 3, **70**: 23 (plant control of contamination); **40**: 7 (chlorinated water dip for); **45**: 11 (incipient freezing for shipping); **55**: 11 (B vitamins in cod & haddock), 14 (quality from gutted vs. ungutted flounder), 17, **56**: 5 (quality from washed vs. unwashed fish); **56**: 3 (conveyor belt in plant), 10 (washing), 14 (nitrite dip for); **60**: 9 (quality in retail stores); **65**: 12 (coliform bacteria in frozen); **66**: 9 (from frozen plaice); **67**: 23 (quality of redfish); **71**: 17 (fat hydrolysis in frozen cod); **73**: 19 ("salt fish" flavour in frozen fresh)

PRP 5: 7 (frozen: types of denaturation); **37**: 7, **40**: 14 (lightly smoked: various preservatives); **38**: 3 (ultraviolet light preservative action); **39**: 13, **43**: 10 (flounder & halibut: comparison of 11 preservatives); **44**: 12, **45**: 19, **47**: 5, **48**: 19 (treatments to minimize drip); **44**: 16 (halibut: nitrite preservative); **53**: 9, **57**: 11 (nutritive value of various); **59**: 15 (flounder & Pac. cod: quality criteria); **64**: 57 (chemicals for rancidity control); **66**: 17 (gases for rancidity control); **68**: 52 (salmon: glazes for rancidity control); **71**: 5, **73**: 58, **76**: 71, 78 (filleting waste recovery); **71**: 15 (types of deterioration); **78**: 11 (cod & sole: *p*H re bacteria action); **81**: 80 (fish washing effect on quality); **82**: 6 (dipping apparatus)

CCG 4: 10 (canned, from freshwater fishes); **5**: 1 (proximate composition of freshwater-fish)

CFI 5 (herring: for kipper snacks); **8** (home-made filleting machine; canning mackerel); **14** (filleting mackerel for canning)

CGR 12 (cod: boneless); **13** (cod: fresh & frozen)

CHO 26, 29, 35 (smoking of)

CHN 3 (trimethylamine determination for spoilage); **6** (cod: slicing for candling for nematodes)

S 102 (cod: bacteriology of frozen); **324** (cod: protein denaturation of frozen); **427** (cooling & freezing rate curves); **510B** (storage & transport of frozen); **532, 540** (prewrapping of fresh & frozen); **551A**

(antibiotic use); **565** (cod & haddock: seaweedy odour in); **781** (quality changes in refrozen cod)
SS 619 (precipitation test for distinguishing between cod & haddock); **710** (frozen Atl.); **873** (sanitation of filleting tables); **882** (cod: taste panel tests)

Fin (*see also* Marking)
J 14: 553 (lake sturgeon age determination from rays); **20:** 679 (tissue explant culture)
B 119: 94 (regeneration after clipping for marking)
S 512 (stickleback: dorsal spines variation)

Fingerlings (*see* names of adult species, particularly salmons & trouts)

Finn, Donovan Bartley
C 6: 335 (pilchard oil vitamin A content), 417 (deep-sea bacteria sampler); **8:** 311 (muscle protein freezing denaturation)
PRA 18: 7 (salting as preservative); **22:** 7 (halibut discoloration); **22:** 11, **24:** 19 (fishermen's courses); **23:** 10 ("putty" fish)
PRP 1: 6 (Prince Rupert, B.C., Technological Station); **5:** 7 (refrigeration re fishing industry); **14:** 3, **17:** 5 (advances in knowledge of freezing)
SS 321, 610 (fish industry re science); **368** (Prince Rupert Station work): **426** (protein freezing denaturation); **454** (B.C. halibut marketing); **481** (quick-freezing criteria); **586** (fish freezing & storage); **674** (Halifax Station work)

Finnan haddies (*see* Haddies, finnan)

Fiords (*see* Inlet and fiord oceanography)

Firmness (of flesh) (*see also* Drip; "Jellied"; "Milky"; Strength, tensile)
PRP 28: 14 (of canned salmon, re inspection)
S 725 (sclerometer for measuring)

Fish, Charles John
J 3: 189 (Atl. zooplankton biology)
SS 587, 588, 589 (*Calanus, Cithona, Pseudocalanus*, in Bay of Fundy)

Fish cakes (*see* Cakes, fish; Loaf, fish)

Fish culture (*see* Hatcheries; Management; Transplantation)

Fish doctor (*see* Doctor, fish)

Fish flour (*see* Protein concentrate)

Fish meal (*see* Meals, marine animal and freshwater fish)

Fish oils (*see also* headings listed under Oils and fats)
B 37, 59, 89 (sources, nature, composition, processing, and uses of marine animal oils)

Fish protein concentrate (fish flour) (*see* Protein concentrate)

Fish sausage (*see* Sausage, fish)

Fish solubles (*see* Solubles, condensed; Stickwater)

Fish sticks (*see* Sticks, fish)

Fisher, Harold Dean
J 14: 83 (N Atl. small cetaceans; correction on **16:** 929); **15:** 1, 495 (*Phocanema* in porpoises, seal stomachs)
PRA 61: 5 (seals feed habits)
PRP 72: 36 (Skeena R. harbour seals)
B 93 (B.C. harbour seal status)
CCG 5 (NW Atl. harp sea populations)
CSG 18 (Atl. seals); **20** (NW Atl. harp seals)
S 386 (rapid sectioning of seal teeth for age determination); **416** (harp seal population utilization); **611** (*Phoca vitulina* age determination)
SS 902, 929 (aerial seal survey); **990** (Atl. seals biology); **1017** (white shark); **1020** (harbour seal delayed implantation); **1021** (Bay of Fundy white whale); **1182, 1183** (Canadian Arctic fisheries research)

Fisher, Kenneth Clarke
J 10: 187 (brook trout selected temperatures)
SS 554 (water balance of seal); **555** (seal blood respiratory characteristics); **706, 908** (Atl. salmon & trout temperature preferences)

Fisheries Research Board of Canada (*see also* Biological Board of Canada; Atlantic Oceanographic Group; Pacific Oceanographic Group; Station; Unit; History; *also* the Annual Reports of the Board)

S 258 (role in fisheries research)

SS 702 (W coast program); **745, 750, 987, 1178, 1218** (work & program); **985** (technological work); **1060** (scholarships); **1182** (Canadian Arctic investigations)

Fishery (general) (*see also* Catch; Fishing, methods of; Gear; History; Productivity; Statistics, fishery & catch; Yield, etc., *also* names of species caught, names of localities and bodies of water)

CNG 64 (productive capacity of Canadian fisheries)

SS 377, 450, 913, 1013 (attack on problems); **251** (forecasting success); **483** (re weather forecasts); **603, 830, 1073, 1200** (B.C.); **610** (science & economy); **679** (N America policy); **747, 748, 749, 909** (wise use of resources); **888, 960** (possibilities); **1150** (utilization factors for B.C. products); **1155, 1163** (utilization factors for B.C. resources); **1183** (in Canadian north); **1243, 1248, 1332** (re oceanography); **1304** (productive capacity of Canadian)

Fishery by-products (*see* By-products; *also* names of species and types of products)

Fishery products (*see also* By-products; *also* names of species and types of products)

B 37, 59, 89 (from fats & oils)

Fishes, freshwater (*see also* Distribution of fish (interior waters); Fauna; Fishes, lists of; *also* names of species, types of products, localities, and bodies of water)

J 10: 196 (upper lethal temperatures, of B.C.); **11**: 673 (parasitized B.C.); **12**: 499 (Skeena R. basin); **14**: 641 (effect of possible B.C. river diversions); **15**: 607 (temperature preference)

B 72 (Yukon & N.W.T.); **92** (for mink feed); **94** (arctic & subarctic Canadian)

PRA 20: 3 (lack of trimethylamine oxide in flesh)

PRC 2: 53 (grading equipment)

PRP 74: 19 (canning); **75**: 35 (smoking), 48 (analyses); **76**: 78, **88**: 66 (utilization of trimmings); **77**: 95 (inspection of flesh for parasitic worms), 118 (small-scale reduction equipment)

CCG 5: 1 (proximate composition)

CNG 64: 59 (productive capacities & potential fisheries)

CVI 12, 13 (constituents, proximate analyses, vitamins A & D)

S 144 (B.C.); **357** (Lake Winnipeg region); **598** (commercial utilization); **702** (Canadian prospects for)

SS 353 (Prairie Provinces); **672, 844, 984, 1208** (B.C.); **849** (Canada & U.S.A.); **1067** (antibiotics effect on bacteria of); **1292, 1345** (delicatessen products); **1293** (gear); **1294** (research)

Fishes, lists of (These references include a number of check lists and lists of fishes collected in an area, wherein the information given did not warrant including these occurrences among the references under the names of the individual species. For many of the references below, however, the fishes will also be found listed under their names. *See also* Distribution; Fauna; Key; Surveys, fishery; *also* names of localities and bodies of water)

C 1902–05: 81 (off Canso, N.S.), 91 (parasitized Atl.); **1906–10**: 79 (off Tignish, P.E.I.); **1911–14(II)**: 1 (Georgian Bay, Lake Huron); **1918–20**: 109 (coastal Cape Breton & Magdalen Is.); **1921**: 49 (Bay of Fundy); **1**: 421 (Lake Athabaska & eastward); **2**: 97 (upper temperature tolerances); **3**: 379, **4**: 197 (Jasper Park lakes); **7**: 203 (Belle Isle Strait); **8**: 1, 13 (Hudson Bay)

J 8: 208 (Great Slave L.); **9**: 414 (Charlotte Co. lakes, N.B.); **11**: 673 (parasitized B.C. freshwater); **16**: 383, 503, **17**: 731 (unusual and uncommon Canadian Atl.)

B 56 (Okanagan Valley lakes, B.C.); **68, 68R** (B.C. coastal); **72** (Yukon & N.W.T.); **73** (young, from E arctic); **94** (arctic & subarctic freshwater); **155** (Canadian Atl. coastal)

PRA 25: 12 (flatfishes in Maritimes catches)

PRP 23: 3 (B.C. sharks); **25**: 9 (B.C. skates & rays); **40**: 3, **62**: 10 (B.C. flatfishes)

AF 12d (Atl. lampreys); **12e** (Atl. sharks, skates & rays); **12f** (Atl. chimaeroids)

S 62 (Hudson Bay drainage system); **144** (B.C. freshwater); **203, 226, 235** (Bay of Fundy & off N.S.); **234** (Malpeque Bay, P.E.I.); **290** (B.C. marine collections); **357, 481** (Man. freshwater)

SS 63 (Canadian); **155** (Maritimes flatfishes); **187** (Vancouver Is.); **419** (Man. game fishes); **452** (checklist of B.C. marine); **575** (N.S.); **576** (Que.); **636** (Cowichan R. system, B.C.); **640** (Okanagan L., B.C.); **655** (freshwater); **672, 844, 984, 1208** (B.C. freshwater); **821** ("Wm. J. Stewart" B.C. collection of marine); **849** (common & scientific names of Canadian & U.S.A.); **1393** (Hudson Bay)

Fishes, marine (*see* Fauna; Fishes, lists of; *also* names of species, localities, and bodies of water)

Fishing, methods of (*see also* Angling; Bait; Drag; Dredge; Dynamite; Echo sounding; Electrofishing; Fibres, synthetic; Gear, savings; Handlining; Harpoon; Hooks; Jigging; Longlining; Mesh; Mopping; Net; Rake; Seine; Spear; Tongs; Torching; Trap; Trawl; Trolling; Twine; Wheel; *also* names of international commissions and appropriate entries under names of organisms)

B 54: 10 (early native methods for B.C. lingcod); **72** (early native methods for salmon, etc. in Yukon & N.W.T.); **121**: 3 (early native methods for Atl. herring)

SS 909 (re B.C. resource use)

Fishing, rate of (*see also* cognate subjects)
B 119 (methods of estimation)

Fishing, sport (*see* Angling, etc.)

Fishing effort and intensity (*see* Effort and intensity of fishing)

Fishing gear (*see* note under Fishing, methods of)

Fishing success index (*see* Effort and intensity of fishing)

Fishways (*see also* Obstructions)
J 17: 507 (for Passamaquoddy proposed power project)

SS 97 (fish pass); **806** (Hell's Gate, B.C.); **965** (Moricetown Falls, B.C.)

Fissipedia (*see* Sea Otter)

Fistularia tabacaria (*see* Cornetfish)

Fitzgerald, D. N.
SS 1192, 1211, 1254, 1300, 1335, 1336, 1368 (ICNAF trawl fishes length frequencies)

Fjarlie, Robin Lent Ibsen
S 355 (seawater sampling bottle)

Fjord (*see* Inlet and fiord oceanography)

Flagellata (*see also* Protozoa; Shellfish occasional toxicity)
C 1917–18: 229 (Canadian Atl.: checklist & index); **2**: 507 (new B.C. species); **6**: 13 (symbiosis with *Beroe*)
J 18: 590 (of Foxe Basin)
PRP 49: 10 (in "red feed")
PF 1e (Canadian Pac.)
S 28 (new or rare B.C.); **76**: 1, 17 (B.C. Dinoflagellata); 760 (*Hexamita* parasite on European oyster transplanted to Canada)
SS 118 (in sucker blood)

Flatfishes (Atlantic) (*see also* Flounder; Groundfish; Halibut; Plaice; Sole; Trawl fishery)
B 155: 381 (full descriptions)
PRA 25: 12 (nomenclature & distribution in local catches)
CSG 12 (description & fishery)
S 850 (hooks & trawl meshes selectivity)
SS 155 (identification & nomenclature); **575** (descriptions)

Flatfishes (Pacific) (*see also* Brill; Flounder; Groundfish; Halibut; Plaice; Sanddab; Sole; Trawl fishery)
J 10: 459 (population estimation)
B 68R: 179 (full descriptions)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax; **CJG**—St. John's, **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

PRP 40: 3 (key); **59**: 10 (Queen Charlotte Is.); **61**: 6 (liver & viscera oils); **62**: 10 (common names)
CNG 4 (common names); **33** (Strait of Georgia catches); **41** (winter catches, 1954–55)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (average weights of fish & livers; liver oil & vitamin A); **17** (thiamin & riboflavin in)

Flavobacterium (*see also* Bacteria)
PRP 96: 11 (indigenous to marine forms)

Flavour (*see also* Quality; Taste tests)
SS 1272 (amino acids re fish)

Flea, sand (***Anonyx nugax***)
PRP 52: 16 (consuming live bait)

Flea, sea (***Orchomenella pinguis***)
PRA 60: 14, **69**: 16 (lobsters eaten by)

Flea, water (*see* Cladocera)

Flemish Cap, Nfld.
PRA 67: 14 (redfish exploration off)

Fleming, Allister Melville
J 11: 11 (European ling record); **14**: 831 (Nfld. fillet nematodes); **15**: 517 (round vs. gutted Nfld. haddock quality); **17**: 775 (Nfld. cod growth & maturity); **19**: 445 (Nfld. cod tagging)
B 109, 141 (Nfld. & Labrador longlining experiments)
PRA 68: 9 (Nfld. commercial longlining experiment)
CJG 2, 3, 4, 5, 6, 7 (Nfld. groundfish investigations & landings, 1954–59)
S 368 (hydrographic changes re Atl. fisheries abundance); **878** (*Lernaeocera* as cod movements indicator)
SS 1184, 1212, 1238, 1289, 1325, 1361, 1415 (ICNAF fish-length frequency statistics); **1232, 1353, 1414** (ICNAF fishing effort & landings statistics); **1413** (fish discards in Nfld. commercial fishery)

Flesh, fish (The following list of references is not exhaustive, as the many investigations pertaining to fish flesh are too numerous to list individually. Other references will be found under the heading Muscle, a term used by many authors as synonymous with flesh. *See also* cognate subjects such as Composition; Fillets; Meals; Mineral constituents; Nutritive value; Pigment; Preservatives; Protein fractions; Proteins; Quality; Spoilage; Vitamin; *also* individual species and products)
C 6: 375 (freezing haddock)
J 15: 695; **16**: 449 (abnormal pigmentation of); **17**: 811 (keepability of dogfish); **18**: 893 (sectional differences in composition)
PRP 62: 21, **76**: 85 (temperature of complete freezing); **73**: 58, **76**: 71 (recovery apparatus)
S 31 (tensile strength); **101** (heat capacity); **109** (freezing rate); **309** (quality when frozen); **517** (review of biochemical constituents); **536** (composition of spawning migratory sockeye)
SS 751 (conductivity & viscosity of extract of cod)

Floats for nets
J 18: 279 (glass, encrusted with goose barnacles)
PRP 25: 21 (glass, drifted from Japan to B.C.); **97**: 27 (buoyancy of cellular plastic)
CVI 19: 66 (for nylon salmon gill nets)

Flood (*see* Flow)

Flora (freshwater) (in general, and lists of) (*see also* Algae; Diatoms; Limnology; Photosynthesis; Phytoplankton; Plankton)
C 1911–14(II): 201, 219 (Georgian Bay, Ont.); **1**: 132 (Quill Lakes, Sask.)
J 3: 366 (Cultus L., B.C.); **8**: 1 (Great Slave L.), 411 (N.B. lakes); **9**: 446 (Cowichan L., B.C.); **12**: 618 (Copper L., N.S.)
S 163 (Jones L., B.C.); **170** (of brackish water); **242** (Potter's L., N.B.); **278, 279** (P.E.I. National Park); **441** (Greenland); **841** (Maritimes)
SS 67 (Georgian Bay); **466** (index to certain illustrations); **563** (Shakespeare Is., Ont.); **564** (Lake Abitibi, Ont.); **577** (of snow & ice)

Flora (marine) (in general, and lists of) (*see also* Algae; Diatoms; Eel-grass; Photosynthesis; Phytoplankton; Plankton; Seaweeds)

CNG 44 (B.C. re herring spawning)
SS 324 (rational protection methods for Pac.); **347, 349** (open sea); **452** (B.C. checklist)

Flora (marsh)
SS 30 (NaCl excretion by); **35** (Nerepis Marsh, N.B.); **67** (Georgian Bay, Ont.)

Flora (terrestrial)
C 1901: 41, **1906–10:** 265 (Passamaquoddy region, N.B.); **1902–05:** 59 (Cape Breton, N.S.); **1911–14(I):** 47 (Passamaquoddy region fungi); **1911–14(II):** 201 (Georgian Bay, Ont.), 213 (Georgian Bay fleshy fungi)
J 3: 366 (Cultus L., B.C.); **8:** 8 (Great Slave L.), 385, 411 (Charlotte Co., N.B.); **12:** 496 (near Ungava Crater), 620 (Copper L., N.S.)
SS 1080 (N.S. vascular plants)

Flounder, arctic (*Liopsetta glacialis*)
CNG 64: 56 (possible fishery potential)
SS 1324 (arctic distribution & ecology)

Flounder, arrowtooth (*Atheresthes stomias*) (arrowtooth flounder; bastard halibut; longjaw flounder; turbot (Pacific))
J 8: 375 (dispersal & growth)
B 68: 310, **68R:** 183 (full description); **89:** 67 (liver oil vitamin)
PRP 26: 17, **61:** 6, **68:** 43, **72:** 41 (liver oil); **40:** 3 (key relation to flatfishes); **62:** 10 (nomenclature); **111:** 20 (as mink feed)
CNG 4 (nomenclature)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
S 389, 851: 49 (in B.C. trawl fishery)

Flounder, eel (*see* Flounder, smooth)

Flounder, fourspot (*Paralichthys oblongus*)
J 16: 508 (Bay of Fundy records)
B 155: 385 (full description)
NSB 14: 21 (life history)

Flounder, long-jaw (*see* Flounder, arrowtooth)

Flounder, pole (*see* Flounder, witch)

Flounder, red (*see* Flounder, winter)

Flounder, sand (*see* Windowpane)

Flounder, slender (*see* Sole, slender)

Flounder, slime (*see* Sole, Dover)

Flounder, slippery (*see* Sole, Dover)

Flounder, smooth (*Liopsetta putnami*) (eel flounder; smoothback flounder)
C 1918–20: 112 (Cape Breton, N.S.); **7:** 67 (freshwater effect on)
J 11: 958 (trematode parasite); **16:** 822 (Miramichi Bay, N.B.)
B 155: 397 (description)
PRA 25: 12 (nomenclature & distribution in local catches)
CSG 12 (description; fishery)
NSB 14: 19 (life history)
S 234 (Malpeque Bay, P.E.I.)

Flounder, smoothback (*see* Flounder, smooth)

Flounder, spotted (*see* Windowpane)

Flounder, starry (*Platichthys stellatus*) (emerywheel; grindstone)
C 1: 290 (feed); **7:** 465 (reaction to sound); **8:** 161 (nematode infection)
J 7: 552 (bacteriological peptones from); **8:** 374 (B.C. dispersal & growth); **18:** 321 (rigor biochemistry); **21:** 335 ("milky" flesh), 765 (trimethylamine & betaine precursors in)
B 68: 324, **68R:** 203 (full description)
PRP 40: 3 (key relation to flatfishes); **59:** 10 (Skidegate Inlet); **62:** 10 (nomenclature); **67:** 36 (stored in germicidal ice); **68:** 43 (liver, liver oil & vitamin A); **73:** 56 (flesh recovery from wastes); **111:** 20 (landings for mink feed)
CNG 4 (common names)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
S 33 (temperature effect on muscle & nerves); **81** (muscle creatine); **82** (arginase in organs); **202** (acanthocephelan parasite); **290** (W Coast Vancouver Is.); **389** (in B.C. trawl fishery); **494** (muscle nucleic acids); **542** (nitrogen excretion); **851:** 48 (B.C. fishery)

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Flounder, summer (*Paralichthys dentatus*) (fluke)
J 16: 507 (Passamaquoddy Bay record)
B 155: 383 (full description)

Flounder, windowpane (*see* Windowpane)

Flounder, winter (*Pseudopleuronectes americanus*) (blackback; lemon sole; red flounder)
C 1902–05: 90 (Cape Breton, N.S.), 91 (trematode parasites); **1918–20**: 99 (putrefaction rate); **1**: 413 (body temperature); **2**: 118 (insulin in); **4**: 137 (temperature & salinity effects on egg hatching); **7**: 67 (effect of freshwater on); **8**: 291 (intestinal lactose-fermenting bacteria)
J 7: 96 (thiaminase in); **11**: 959, 963 (trematode parasite; correction on **12**: 942); **12**: 187 (yield, St. Mary Bay, N.S.; correction on **19**: 942); **16**: 821 (Miramichi Estuary, N.B.); **20**: 243 (kidney tubules muscular action), 551 (seasonal movements; correction on **21**: 1553); **20**: 679 (tissue explant cultures)
B 119 (yield computation); **155**: 398 (full description)
PRA 20: 3 (trimethylamine oxide reduction during spoilage); **25**: 11 (nomenclature & distribution in local catches); **52**: 3 (clam enemy)
CNG 64: 16 (productive capacity)
CSG 12 (description); **17** (inshore dragging)
NSB 14: 17 (life history)
S 52 (muscle lactic acid); **54** (total weights); **59** (blood sugar); **108** ("dizziness" disease); **111** (myxosporidian parasites); **234** (Malpeque Bay, P.E.I.)
SS 814 (reversed); **1225** (Passamaquoddy Bay); **1368** (length frequencies)

Flounder, witch (*Glyptocephalus cynoglossus*) (Craig fluke; gray sole; pole flounder; witch) (*see also* Catches; Groundfish, Atlantic; International Commission for the Northwest Atlantic Fisheries)
C 1902–05: 90, **1918–20**: 113 (Cape Breton, N.S.)
J 7: 96 (thiaminase in); **11**: 954 (trematode parasite); **14**: 854 (nematodes in fillets); **16**: 822 (Miramichi estuary)
B 108 (Nfld. Danish-seine exploration); **155**: 388 (full description)
PRA 20: 3 (trimethylamine oxide reduction during spoilage); **25**: 12 (nomenclature & distribution in local catches)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CSG 2 (offshore landings, 1938–40); **12** (description)
NRB 4: 14 (Nfld.)
NSB 14: 12 (life history)
S 874 (trawl mesh selectivity)
S 1211, 1238, 1335, 1336 (length frequencies)

Flounder, yellowtail (*Limanda ferruginea*) (rusty dab; yellowtail)
C 1902–05: 90, **1918–20**: 113 (Cape Breton); **1902–05**: 91 (trematode parasites)
J 7: 96 (thiaminase in); **11**: 171 (study of 3 fishing areas), 954 (trematode parasite); **14**: 859, **17**: 762 (nematode parasites); **16**: 821 (Miramichi estuary)
B 155: 395 (full description)
PRA 20: 3 (trimethylamine oxide reduction during spoilage); **25**: 12 (nomenclature & distribution in local catches)
CNG 64: 16 (productive capacity)
CSG 2 (offshore landings, 1938–40); **12** (description; fishery)
S 234 (Malpeque Bay)
NSB 14: 15 (life history)

Flounders (Atlantic) (in general) (*see also* Flatfishes (Atlantic))
PRA 27: 13 (killed by quicklime used for destroying starfish); **55**: 14 (gutting vs. not gutting at sea); **58**: 17 (bait for groundfish)
CNG 64: 16 (productive capacity)
CSS 1, 2, 3, 4, 5, 6, (N.S. landings, 1947–52); **7, 8, 9** (Maritimes landings, 1953–55)
SS 119 (James Bay); **162** (egg cytology)

Flounders (Pacific) (in general) (*see also* Flatfishes (Pacific); *also* Sole entries with same adjectival common name)
J 5: 148 (comparative value of preservatives for fillets); **8**: 374 (dispersal & growth of 3 B.C. species)
B 7: 21 (Langerhans islets tissue re insulin)
PRP 16: 7, **61**: 6, **68**: 43 (liver, liver oil & vitamin A); **38**: 3, **39**: 13, **40**: 10,

45: 19, **47**: 5 (fillet quality preservation); **40**: 3 (key to B.C. species); **53**: 9 (nutritive value); **62**: 10 (common names)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 17 (tissues thiamin & riboflavin)

Flour, fish (*see* Protein concentrate)

Flow, rate or volume of (*see also* Currents, reaction to; Dilution effect)
C 2: 12 (high water effect on trout)
J 2: 383, **6**: 217, (McClinton Creek, B.C.); **4**: 48, **5**: 228 (Margaree R., N.S.); **4**: 323 (Forest Glen Brook, N.S.); **5**: 401 (Fraser R.), 485 (Moser R., N.S.); **6**: 158 (Cowichan R., B.C.), 311, 399 (N.B. & N.S. salmon rivers); **8**: 178 (Skeena R.), 241 (young Pac. salmon reaction to); **9**: 63 (Somass R., B.C.); **10**: 146 (St. Lawrence R.), 523 (salmon fry response to); **11**: 362 (re salmon survival), 814, 881 (Fraser R. effect on tides); **12**: 346 (Miramichi R., N.B.); **15**: 1213 (rainfall effect on Atl. salmon stream); **16**: 835 (re Pac. salmon migration; correction on **17**: 943); **17**: 453 (Ellerslie Brook, P.E.I.)
B 57: 56 (Margaree R., N.S.); **86** (Moricetown Falls, B.C.); **99** (artificial freshets, LaHave R., N.S.); **106** (Babine R., B.C. after rockslide removal)
PRP 64: 61, **89**: 88 (rainfall effect, Nile Creek, B.C.); **90**: 16 (coastal streams & rivers diluting sea); **93**: 7 (controlled, re Nile Creek salmon production); **113**: 16 (flood damage to river bed)
S 83 (Fraser R.); **175** (re Atl. salmon abundance); **257** (pink salmon streams); **298** (Atl. salmon rivers); **391** (re Pac. salmon production)
SS 967 (re Atl. salmon cycles)

Fluctuations (*see also* Cycles)
J 15: 625 (various marine fishes), 1213 (Shubenacadie salmon, N.S.)
PRA 2: 16, 18 (Atl. salmon)

Fluke (*see* Flounder, summer)

Fluke, Craig (*see* Flounder, witch)

Flukes (*see* Trematoda)

Fluorescence
PRA 72: 19 (salt cod pickle)

Fluorine compounds
J 12: 642 (in fish & mammal livers); **16**: 7 (in Atl. coastal seawater)
CHN 17 (lobster tolerance for fluoridated water)

Flury, Jann
J 20: 1549 (modified Petersen grab)

Fluvarium (*see also* Aquaria)
J 15 (for testing taste, etc. preferences of fish)

Flyingfish, Atlantic (*Cypselurus heterurus*)
B 155: 171 (full description)

Flyingfish, spotfin (*Cypselurus furcatus*)
J 16: 507 (N.S. record)
B 155: 170 (full description)

Foerster, Russel Earle
C 1: 219 (Vancouver Is. Hydromedusae); **2**: 335 (sockeye salmon ecology); **5**: 1, 37, 55, **8**: 345 (Cultus L., B.C., sockeye life-history & propagation)
J 2: 311 (Cultus L. sockeye life-history & propagation); **3**: 26 (sockeye sea return features), 421 (temperature re seaward migrating sockeye); **4**: 151 (natural vs. artificial sockeye propagation), 184 (young sockeye lake mortality); **5**: 315 (predator reduction effect on young sockeye); **6**: 140 (littleneck clam sex & gonads), 267 (lake sockeye size vs. population density), 483 (egg restocking depleted sockeye areas); **7**: 88 (sea runs from landlocked sockeye); **10**: 293 (Cultus L. & Sweltzer Cr., B.C., coho salmon); **11**: 339 (adult sockeye counts from known smolt counts), 988 (sockeye sex ratios)
B 50 (artificial sockeye spawning methods); **53** (sockeye propagation)
PRP 1: 9 (Cultus L. Salmon Research Station); **2**: 3, **5**: 11 (Cultus L. marked sockeye returns); **6**: 6 (salmon hybridization); **9**: 3 (sockeye feeding experiments); **10**: 10 (sockeye pond retention); **14**: 5 (artificially spawning & fertilizing sockeye eggs); **16**: 10 (hatchery trough capacity for sockeye eggs & fry); **25**: 18 (unauthentic

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marked salmon); **28**: 3 (salmons egg content); **32**: 15 (attempted conversion of landlocked salmon to sea-run); **32**: 21, **36**: 20 (predator control for sockeye fry conservation); **46**: 14 (Cowichan Bay salmon mortality); **48**: 3 (young pilchard mortality); **53**: 12 (dogfish tagging); **56**: 14 (*Cystophyllum* seaweed in Strait of Georgia), 15 (Pac. mackerel); **64**: 64 (tagged California shark caught in B.C.); **83**: 44 (obituary of H. C. Williamson); **93**: 30 (seaward migrating Lakelse L. sockeye & coho)

CNG 1 (introduction: herring catch statistics)

S 67 (physico-chemical sockeye migration factors); **84** (propagation role in sockeye conservation); **124** (Copepoda in salmon feed); **127** (natural vs. artificial sockeye propagation); **197** (Shuswap L., B.C., limnology); **248** (size re egg content of pink & sockeye salmons); **294** fisheries management prospects); **295** (fish production computation); **390** (B.C. coast fisheries research); **409** (B.C. salmon in or near fresh water); **412** (Pac. salmon management problems)

SS 322 (field photomicrographic method); **369, 371, 482, 614, 832** (sockeye propagation); **370, 938** (salmon reactions to power dam); **400, 602, 615** (B.C. salmon homing); **401, 590, 613, 797, 1022** (natural vs. artificial salmon propagation); **427** (artificial sockeye rations); **538** (Pac. salmons hybrids); **539** (Pac. salmons meristic variations); **540, 773** (identifying young Pac. salmons); **611, 612** (predatory fish problems); **645** (predator control re young sockeye mortality); **671** (Pac. salmons migration); **744, 850** (Nanaimo Station work); **851** (obituary of C. McL. Fraser); **909, 1073** (B.C. fisheries resource-use problems); **939, 1153** (Pac. salmon investigations)

Fofonoff, Nickolas Paul

J 19: 1121 (machine computations of oceanic watermass transport)

CPO 1959-23 (NE Pac. oceanographic survey); **1960-27** (mechanically processing oceanographic data); **1961-9** (NE Pac. water transport calculations)

S 582 (thermodynamical oceanographic measurements interpretation); **612** (NE Pac. Canadian oceanography); **855** (oceanographic sound-speed calculations precision); **857** (Hecate Model stilling-well design)

SS 1239 (NE Pac. oceanography); **1290** (oceanographic energy transformations); **1326** (seawater physical properties); **1327** (ocean currents thermodynamics)

Folic acid (*see* Vitamin B)

Follett, Wilbur Irving

J 15: 47 (redescription of *Lampetra ayresii*)

Fontaine, Marion

J 12: 858 (Ungava Bay planktonic copepods)

Food (for man) (*see also* headings relating to use of fishery products for human consumption)

SS 552 (fish processing re nutritive value); **580** (fish uses not only on Fridays); **710, 711** (fish); **736** (fish in wartime diet); **1006, 1083, 1084, 1094, 1164, 1166, 1265, 1346** (fish re nutrition); **1383** (new foods from the sea)

Food (of organisms other than man) (*see* Feed studies; Feedstuffs; Meals; Predation; Predators; Poultry; Ruminant livestock feed; *and* other cognate subjects)

Food poisoning (*see* Botulism; Poisons, general; Shellfish occasional toxicity)

Footballfish, Atlantic (*Himantolophus groenlandicus*)

B 155: 426 (full description)

Foraminifera

C 1917–18: 229 (Canadian Atl., checklist & index); **1921**: 133 (Hudson Bay)

J 15: 1186 (in arctic mud & ice)

S 621 (in arctic waters)

Forbes, Francis Duncan

J 16: 391 (exercised trout blood changes)

Forbes, John Campbell

C 3: 467 (fish muscle tensile strength)

S 31 (haddock muscle tensile strength)

Forbes, W. F.

SS 1185, 1213 (hydrogen bonding)

Forbes Brook, P.E.I.
C 3: 365, **5**: 203 (trout)

Ford, Marjory A.
SS 759 (Canadian Great Lakes fishery landings, 1867–1939)

Forecasting (*see also* Abundance)
PRA 23: 13 (hurricane by jellyfish); **27**: 8 (of oyster spatfall); **72**: 23 (of squid runs)
PRP 95: 48 (of tidal currents)
CNG 7, 8, 15, 19, 21, 24, 25, 29, 34, 38, 43, 45, 49, 53 (B.C. herring availability); **13** (1948 B.C. salmon catches); **14** (1949 Skeena R. salmon catch)
COF 8 (of oyster set size)
S 77, 90, 91, 92, 107, 113, 115, 118, 122, 134, 145, 179, 195, 219, 233, 328, 342, 362, 396, 422, 465, 501 (a series of annual reports re sockeye salmon runs, No. 11–25, 36–42); **504** (salmon flesh colour after canning); **592** (shellfish occasional toxicity); **848** (Canadian fisheries in year 2000); **851** (B.C. fisheries prospects)
SS 92, 114, 130, 152, 167, 197, 228, 248, 264, 279, 730, 741, 756, 771, 796, 811, 824, 848, 880, 903 (No. 1–10 & 26–35 of above series re sockeye runs); **251** (fishery success); **483** (weather re fisheries); **639** (B.C. salmon runs); **898** (pulpmill pollution); **1126** (cod & haddock fishery re sea temperatures); **1304** (Canadian fisheries productive capacity)

Formaldehyde (*see also* Disinfectants)
C 7: 139 (halibut yellowing inhibitor)
J 7: 101 (for fishing vessel holds, etc.); **20**: 1441 (effect on length & weight of fish preserved in)
PRA 3: 13 (for bait preservation); **52**: 28 (for red halophilic bacteria inhibition)
PRP 6: 3 (halibut yellowing bactericide); **21**: 13 (deodorizing refrigerator cars); **35**: 24 (in preservative ice); **36**: 7 (for halibut livers & intestines); **42**: 8, **56**: 12 (fish bait preservative); **59**: 7 (as germicidal spray)
SS 445, 526 (spray for fish holds)

Formic acid
S 380 (in marine tube worm)

Forrester, Clifton Roger
J 12: 134 (flatfish tag wire corrosion); **20**: 1095 (B.C. blacktail snailfish record); **21**: 9 (Pac. cod embryo development), 1531, 1533 (rock sole eggs demersal quality & development rate)
B 139 (Strait of Georgia trawl fishery review)
PRP 87: 27 (lemon & rock soles length & age); **95**: 35 (B.C. dogfish feeding habits); **99**: 28, **103**: 8 (Pac. cod tagging); **104**: 11 (lemon sole migrations); **105**: 11 (stock density re "milky" lemon sole flesh); **111**: 20 (B.C. fish landings for mink feed)
S 394 (B.C. sablefish fishery); **693** (practical use of salmon repellent); **735** (leatherback turtles off B.C.)

Forrester, Warren David
J 17: 727 (Bay of Fundy current measurements)

Foskett, Dudley Robert
J 15: 867 (Rivers Inlet sockeye)
PRP 70: 10, **72**: 28 (Skeena R. lakes system limnology); **86**: 18 (Nanaimo area young salmon); **90**: 9 (rockslide effect on Babine L. sockeye salmon run); **102**: 16 (Bella Coola sockeye age & size)
S 328, 342, 362, 396, 422, 465, 501 (contributions to life history of B.C. sockeye, No. 36–42)
SS 903 (No. 35 of above series)

Fothergill, Noel Oviatte
S 358 (water movements, Sambro lightship, N.S.)

Fougère, Henri
J 6: 441 (flesh preservatives); **7**: 200 (fresh capelin artificial drying); **9**: 388 (cod muscle water transfer); **16**: 747 (cod muscle proteolysis salt effect)
B 112 (dried salt fish processing)
PRA 21: 6 (cod liver oil extractor); **25**: 7 (smoking eels); **25**: 9, **28**: 8 (canning eels in jelly); **31**: 6 (smokehouse); **34**: 15 (drying boneless cod); **36**: 10 (fish plant sanitation); **38**: 6 (artificially drying capelin); **47**: 5 (nomograph for moisture loss calculations); **52**: 15, 18, 22 (salting

cod); **62**: 7 (splitting table for salt fish plants)

CHN 6 (cod fillet slicing machine); **14** (Foreword)

SS 751 (cod fillet physico-chemical changes with time & temperature); **1186** (Halifax Station researches); **1240** (sea: the inner space)

Found, Heath Richard

CSG 29 (oyster fisheries rehabilitation)

Fowler, James

C 1901: 41 (St. Andrews, N.B., flora); **1902–05**: 59 (Canso, N.S., flora)

Fox

J 7: 94 (effect of fish thiaminase in rations); **12**: 491 (arctic, *Alopex lagopus ungava*, near Ungava Crater)

B 59: 319, **89**: 281 (fish vitamin oils in feed)

Fox, Sylvia Mary

S 608, 634 (marine bacteria nutrition & metabolism)

Foxe Basin and Channel (*see also* Oceanography, Arctic (north of Hudson Bay))

J 15: 219 (bearded seal), 1175 (ice colour); **16**: 403 (station list), 453 (oceanography off Igloolik); **18**: 563 (plankton & ice); **19**: 377 (zooplankton)

S 600 (bird distribution & migration)

SS 1409 (birds)

France

SS 628 (fisheries biology & culture); **1193** (trawling methods)

Frank, Mark

J 5: 249 (salt fish pathogenic bacteria survival), 276, 287 (salt fish "dun" moulds & fungistats)

Franklin District, N.W.T. (*see* Arctic, Canadian; Northwest Territories; *also* specific islands and localities)

Frantz, David Heer Jr.

J 14: 931 (transponding drift buoys)

Fraser, Charles McLean

C 1914–15: 119 (possible Vancouver Is. lobster sites), 133 (B.C. oceanography); **1915–16**: 21 (chinook salmon scales), 39 (coho salmon life history); **1917–18**: 5 (B.C. Sea Lion Commission report), 105 (sockeye salmon rearing in freshwater), 329 (E Canada hydroids); **1918–20**: 5 (Pac. salmon growth rate), 29 (severe winter effects on marine organisms), 35 (Departure Bay hydrography), 137 (E Canada hydroid key); **1921**: 103 (Pac. herring), 167 (Canadian Biological Stations publications, 1901–1921); **1**: 95 (new & other B.C. hydroids), 285 (ichthyological notes); **3**: 323 (Cheticamp Expedition hydroids); **6**: 475 (Hudson Bay & Strait hydroids)

J 1: 503 (Queen Charlotte Is. hydroids)

PRP 6: 9 (commercial B.C. clams)

AF 3a (Canadian Atl. hydroids)

S 19 (B.C. marine wood borers); **72** (littleneck clam ecology); **73** (butter clam ecology); **147** (Queen Charoltte Is. hydroid distribution)

SS 42, 61, 90, 91, 165, 541, 675 (North American west coast hydroids); **48** (*Endocrypta huntsmani* hydroid); **62, 113, 262, 291, 774** (E Canadian coast hydroids); **88, 89, 263, 290** (B.C. marine biology); **126** (B.C. herring); **127** (B.C. ichthyological notes); **128, 194** (Pac. salmons growth); **129** (*Odontosyllis* swarming); **142** (Pac. salmon grading); **143** (*Aequora* medusa development); **166** (marine animals migration); **193** (fish parasitic copepods); **195** (N Pac. salmon enemies); **213** (Departure Bay Biological Station); **214** (association, commensalism & parasitism among Strait of Georgia animals); **227, 675** (Canadian Arctic hydroids); **278, 325** (Pac. marine wood borers); **323** (pelagic fish eggs & larvae international investigations); **324** (Pac. aquatic life protection); **337, 374** (B.C. clams spawning & larvae); **372, 542, 591, 616, 707** (B.C. oceanography reviews); **373** (need for oceanographic data re plankton content & distribution); **402** (*Cardium corbis* ecology); **428** (S Strait of Georgia marine fauna); **455** (hydroids as food supply); **602** (Pac. salmons home stream theory); **745** (NE Pac. marine zoology)

J 7: 214 (obituary of)

PRP 70: 3 (obituary of)

SS 823, 851 (obituary of)

Fraser, Doris Isabel

J 13: 569, **14**: 627, 925 (frozen redfish, cod, fillet storage); **16**: 43 (frozen fish lipid hydrolysis); **18**: 483 (Atl. halibut flesh composition variations), 495 (mackerel, tuna, swordfish proximate analyses), 641 (cod muscle rigor process), 893 (composition of various Atl. fishes); **20**: 1153 (porbeagle composition & palatability); **21**: 101 (frozen cod polyphosphate treatment), 577 (frozen cod palatability), 813 (irradiated scallops storage), 827 (gamma irradiation of haddock fillets)

PRA 66: 9 (fillets from frozen plaice); **69**: 28 (Na phosphate crystals on salted cod); **71**: 17, **72**: 37 (frozen fish fat hydrolysis); **73**: 17 ("salt fish" flavour in frozen cod fillets)

S 523 (Na phosphate crystals on salt fish); **685** (moisture in fresh fish blocks); **781** (stored refrozen cod fillet changes)

Fraser, James Millan

J 12: 147 (Lake Huron smallmouth bass fishery; correction on **12**: 942)

Fraser River and estuary, B.C. (*see also* Dilution effect; Estuaries; Oceanography, Pacific (NE coastal waters); Strait of Georgia; *also* biology of the NE Pacific species of salmon, particularly Salmon, sockeye (biology))

J 5: 401 (oceanographic aspects of estuary); **11**: 814, 881, **14**: 241, 321, 950, **15**: 1097 (effect on oceanography of adjacent coastal waters); **11**: 988 (re sockeye); **14**: 521 (effect on Strait of Georgia plankton distribution); **15**: 91 (shipworm incidence in estuary); **20**: 105 (comparative ecology of 2 dace species)

B 16 (sockeye tagging)

PRP 4: 3 (bio-oceanographic effects on Strait of Georgia); **95**: 35 (eulachon & dogfish catches); **104**: 26, **106**: 3 (estuarial basin hydrography); **114**: 13 (pollution contributor)

S 56, 75, 83, 344 (estuarial oceanography); **453** (sockeye abundance & exploitation); **851**: 4 (salmon fishery, 1895–1962); **862** (migration & exploitation of 1959 pink salmon runs)

SS 175, 806, 834 (Hell's Gate obstruction to salmon); **378** (effect on Strait of Georgia)

Freeman, Harry Cleveland

J 13: 869 (cod & haddock viscera processing); **18**: 501 (cod tropomyosin amino acids); **20**: 1 (*Phocanema* chemical analyses), 729 (bacteria amino acid composition re aquatic productivity); **21**: 813 (irradiated scallops storage)

PRA 65: 24 (acid ensilage from offal)

CHN 4 (fish salt content determination)

S 770 (salmon steroid hormones metabolism); **856** (salmon plasma steroid hormones determination methods)

Freeze Drying (*see* Dehydration)

Freezing fishery products (*see also* Chilling; Cooling; Fillets; Flesh; Freezing point; Frozen fishery products; Insulation; Refrigeration; Thawing; *and* other cognate subjects)

C 1: 297 (relative merits of air, brine, ethyl chloride); **6**: 375 (time & rate: physical & thermal data); **8**: 311 (rate effect on protein denaturation)

J 1: 95 (effect on bacteria); **13**: 47 (of Atl. oyster meats); **20**: 1183 (tuna by brine spraying)

B 11: 28 (general principles); **20**: 23 (haddock fillets); **24** (brined mackerel for canning)

PRA 1: 9 (cod liver to prepare oil); **2**: 4 (fillets in brine), 12 (effect on drip formation); **5**: 10 (fish & shellfish for shipping); **10**: 3 (oysters), 6, **65**: 12 (effect on spoilage bacteria); **10**: 8, **13**: 7, 9 (herring for bait); **66**: 9 (plaice)

PRP 5: 7, **11**: 7, **17**: 5, **22**: 11, **26**: 12, **37**: 12, **42**: 16, **43**: 3, **48**: 19, **50**: 16 (rate; critical rate; quick vs. slow); **8**: 3 (station facilities); **14**: 3 (advances in knowledge); **55**: 13 (concentrating clam nectar); **74**: 3 (preparing shrimp for); **87**: 47, **88**: 57, **92**: 21 (fish at sea); **94**: 3 (brine freezing)

CHN 2 (& cold storage of lobster meat)

CVI 15 (effects on nutritive factors)

CVG 27 (albacore on seine boats)

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S 109, 595 (rate: mathematics of); **309** (principles, applications & facilities); **427** (equipment; rate curves); **672** (review of recent advances); **685** (re excessive drip in cod blocks); **741, 742** (procedures & problems); **768** (at sea)
SS 481, 692, 951 (quick freezing); **586** (& storage); **755** (effect on canned herring); **1121** (methods); **1237** ("wet" fish blocks for fish sticks); **1287** (effect on proteins); **1372** (fish at sea); **1410** (freshwater fish)

Freezing live fish (*see* Revival)

Freezing point (*see also* Expansion, coefficient of; Melting point; Thawing)
C 6: 386 (of fish muscle, from heat capacity); **8:** 317 (halibut muscle juice)
J 1: 98 (re killing or inhibition of bacteria); **14:** 633 (of fish flesh)
B 59, 89 (of marine animal oils; *see* their indexes)
PRP 14: 3, **59:** 19, **62:** 21, **76:** 85 (of fish flesh); **32:** 17, **36:** 16 (of fish oils)
S 101 (of Atl. fishes)

French, Harold Victor
J 6: 338 (smoke deposition factors during fish smoking); **7:** 585 (extracting fish protein fractions)

Freshets (*see* Currents, reaction to; Flow)

Freshness (*see* Quality)

Freshwater fishes (*see* Fishes, freshwater)

Freudenberg, Werner
PRP 20: 16 (proximate analysis & glycogen of B.C. oysters)

Frick, Harold Clay
J 14: 683 (optimum fishery exploitation)

Friedman, Mac Hegby Fred
J 1: 239 (skate stomach innervation). 251 (elasmobranch gastric secretion), 261 (skate clasper & clasper-gland function)
PRA 10: 3 (frozen oysters survival)
SS 478 (spinal cord re skate blood osmotic pressure)

Fritz, Clara Winifred
C 1918–20: 49 (Passamaquoddy Bay diatoms distribution), 63 (experimental diatom culture)

Frobisher Bay, Baffin Island (*see also* Arctic, Canadian; Oceanography, arctic)
J 15: 155 (physical oceanography); **19:** 677 (Decapoda)
S 469 (marine biology)
SS 937 (biological expedition)

Frog, fishing (*see* Monkfish)

Frogs
C 2: 148 (*Rana* in SW Ont. streams)
J 7: 94 (thiaminase in muscle & viscera)
B 94: 24 (arctic & subarctic)

Frolander, Herbert Farley
J 19: 657 (zooplankton off B.C. & Washington)

Frost, Nancy
NRB 3 (Nfld. decapod larvae); **4** (Nfld. fishes); **5** (*Ceratium* as hydrographic indicator); **9** (Nfld. trout)
NSB 6 (Nfld. trout conservation); **8** (Nfld. fishes life history); **14** (Nfld. flatfishes life history)

Frost, Paul Joseph
PRP 62: 21 (true freezing point of fish flesh); **63:** 44 (expansion coefficient of liver oils)

Frostfish (*Benthodesmus simonyi*) (*B. atlanticus*) (*see also* Tomcod, Atlantic)
J 16: 509 (on Sable Is. Bank)
B 68: 160, **68R:** 229 (description of Pac.); **155:** 278 (description of Atl.)

Frozen fishery products (The following list is not exhaustive; *see also* Dehydration; Denaturation; Drip; Fillets; Flesh; Freezing fishery products; Freezing point; Glazes; Rancidity; Refrigeration; *and* other cognate subjects)
C 1906–10: 23 (frozen vs. fresh herring bait for cod); **1:** 401 (urea in frozen dogfish); **8:** 311 (halibut: protein denaturation)
J 7: 237 (rancidity control). 599 (flesh myosin denaturation); **20:** 1183 (thawing effects on tuna muscle constituents)
B 20 (haddock fillets); **90** (marketed quantities of pink & chum salmon)
CVG 23 (plastic films for packaging)
S 102 (cod fillets: bacteriology); **741** (consumer level quality)

SS 158, 159, 309 (handling); **339** (freshness)

Fry (*see* name of adult fish; *also* Growth; Larvae; Migration)

Fry, Frederick Ernest Joseph
J 7: 169 (goldfish cruising speed vs. temperature); **13:** 1 (drift-card movements, Georgian Bay)

Fucus (*see* Algae, marine; Rockweed; Seaweeds)

Fucus evanescens (*see* Rockweed, common)

Fujinaga, M.
SS 1096 (fur seals distribution & feed)

Fuller, William Albert
J 12: 768 (Great Slave L. region inconnu)

Fulmar (***Fulmarus glacialis***)
S 750, 836 (NW Atl. distribution)

Fulmarus glacialis (*see* Fulmar)

Fundulus (species?) (*see* Topminnow)

Fundulus diaphanus (*see* Killifish, banded)

Fundulus heteroclitus (*see* Mummichog)

Fundy, Bay of (*see also* Maine, Gulf of; Oceanography, Atlantic (NW coastal waters); Passamaquoddy Bay; St. Andrews, N.B., St. Croix River; Saint John River)
C 1901: 52 (sea urchin), 59 (sardine); **1911–14(I):** 11 (diatoms), 39 (caprellid), 69 (parasitic copepods); **1915–16:** 93 (phytoplankton); **1917–18:** 111 (pollock); **1921:** 49 (fishes); **3:** 423 (haddock)
J 1: 279 (phytoplankton); **2:** 41 (lobsters); **3:** 189 (zooplankton); **6:** 472 (Polychaeta); **7:** 490, **20:** 983 (shellfish poisoning); **10:** 1 (herring); **15:** 1 (porpoises parasites), 1213 (Minas Basin salmon), 1219 (zooplankton), 1259 (fatness of small herring), 1451, **17:** 933 (larval herring; correction on **17:** 943); **17:** 735 (herring explorations); **18:** 221 (herring movements)
B 51: 9 (salmon); **75** (shellfish toxicity); **134:** 60 (re Atl. oceanography)
PRA 3: 10 (soft-shell clam resource); **4:** 8, **44:** 6, **49:** 14, **54:** 12, **70:** 31 (scallop); **4:** 10 (haddock); **8:** 6, **70:** 10 (herring); **11:** 12 (hake fishery); **13:** 10 (cod spawning)
S 1 (Isopoda); **43** (light penetration); **203** (rare fishes & salps); **587** (Minas Basin fauna)
SS 181 (sardine growth); **201** (circulation); **484** (power development effect on tides); **587, 588, 589** (biology of 3 Copepoda); **966** (biological production); **1021** (a beluga in)

Fungi (*see also* "Dun"; Furunculosis; Moulds)
C 1911–14(I): 47 (fleshy, St. Andrews, N.B.); **1911–14(II):** 213 (fleshy, Georgian Bay region, Ont.); **1917–18:** 152, 171 (on Atl. hatchery salmon); **5:** 193 (Saprolegniaceae physiology)
J 11: 901 (*Sporendonema* osmophilism); **20:** 435 (*Ichthyosporidium* epizootic re Atl. herring abundance)
PRA 62: 30 (*Ichthyosporidium* cause of herring mortality)
PRP 78: 6 (*Saprolegnia* on sockeye salmon eggs)
S 441 (Greenland); **690** (parasitic on diatom); **858** (in seawater suspended matter)
SS 103 (rare, St. Andrews, N.B.); **501, 502** (new species, *Ophiobolus halimus*, on eelgrass)

Fur-bearing animals (*see also* Feedstuffs; Fox; Mink; Seal, northern fur)
B 59: 319, **89:** 281 (fish vitamin oils in feeds)

Furcimanus diapterus (*see* Eelpout, blackfin)

Furk, Dorothy Mary
PRP 82: 3 (B.C. butter clam occasional toxicity)

Furunculosis (*see also* Bacteria (in diseases of organisms))
C 1917–18: 172 (transmissibility); **8:** 103 (in B.C. whitefish & salmon)

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J 5: 1 (viability of *B. salmonicida*); **19:** 989 (caused by *Aeromonas salmonicida* in Ont. fish)
PRP 15: 7 (in B.C. salmonids)
S 218 (serology of *B. salmonicida* phases); **252** (immunization against)
SS 424, 425, 670 (B.C.); **609** (dissociation; G form); **644** (serology of S, R & G phases); **1039** (of Quebec hatchery trout)

Future of fisheries (*see* Forecasting)

G

Gadd, Ronald Edward Alfred
S 695, 696 (Pac. salmon muscle proteins); **806** (Salmonidae multiple haemoglobins)

Gadidae (*see also* Burbot; Ling)
B 94: 23 (arctic & subarctic distribution)

Gadus callarias (*see* Cod, Atlantic)

Gadus macrocephalus (*see* Cod, Pacific)

Gadus morhua (*see* Cod, Atlantic)

Gadus ogac (*see* Cod, Greenland)

Gadus poutassou (*see* Whiting, blue)

Gadus tomcod (*see* Tomcod, Atlantic)

Gaffkaemia
CHN 9 (lobster disease)

Gage, Douglas Gordon
J 11: 355 (vitamin B_{12} from cod-liver solids)

Gaidropsarus argentatus (*see* Rockling, silver)

Gaidropsarus ensis (*see* Rockling, three-beard)

Gailus, Dorothy
B 110 (Board publications titles & index, 1901–54)

Galathealinum (*see* Beardworm)

Galeocerdo cuvieri; G. arcticus (*see* Shark, tiger)

Galeorhinus galeus (*see* Shark, soupfin)

Galeorhinus zyopterus (*see* Shark, soupfin)

Gall bladder (*see* Bile)

Gallay, Lydia Ruth
J 19: 605 (cod oil free fatty acids esterification)
S 662 (unsaturated fatty acids ozonolysis)

Galvanotaxis (*see* Electrofishing; Lamprey, sea)

Gambusia affinis (*see* Mosquitofish)

Game fish (*see also* Angling; Distribution; *also* names of game fishes, e.g. Albacore; Salmon; Trout; Tuna)
B 32 (B.C.); **72:** 89 (N.W.T.); **84** (Cowichan R., B.C.)
S 141 (pond culture); **144** (B.C.)
SS 891 (Cowichan L. & R.)

Gamma rays (for food sterilization) (*see* Irradiation)

Gammarus (*see* Amphipoda)

Gar, longnose (*Lepisosteus osseus*)
C 1911–14(II): 11 (Lake Huron)
J 16: 147 (association in Ont. streams)
B 155: 83 (found in saline estuary)
SS 737 (muscle autolysis)

Gardiner Canal, B.C. (*see also* Inlet and fiord oceanography)
J 14: 605 (physical oceanography)

Garfish (species ?)
B 7: 20 (re Langerhans islets)

Garibaldi Park, B.C.
SS 288 (alpine insects & lake crustaceans); **465** (subalpine Algae & Protozoa)

Garrod, David John
J 20: 195 (Africa *Tilapia* mortality rates)

Garside, E. J.
SS 1128 (carp water temperature selection)

Gaspé Coast, Que.
C 1906–10: 45 (fauna)

"Gaspé cure" salt cod (*see* Cod, Atlantic (salted))

Gaspereau (*see* Alewife)

Gasterosteus aculeatus (*see* Stickleback, threespine)

Gasterosteus bispinosus (*see* Stickleback, blackspotted; Stickleback, threespine)

Gasterosteus cuvieri
C 1921: 149, **8:** 22 (Hudson Bay)

Gasterosteus wheatlandi (*see* Stickleback, blackspotted)

Gastropoda (*see also* Abalone; Drill; Limpets; Mollusca; Nudibranchiata; Polynices; *and* other representative classifications)
C 1917–18: 245 (Canadian); **3:** 135 (*Littorina:* descriptions), **167** (*Buccinum:* habits); **4:** 413 (*Littorina:* growth & behaviour)
J 5: 23 (Pteropoda in Canadian Atl.); **7:** 219 (*Odostomia* commensal with clam); **11:** 244 (Pteropoda in Belle Isle Strait); **12:** 287 (Naticidae egg masses); **21:** 1155 (species introduced into B.C.)
PRP 18: 3, **19:** 3, **79:** 35 (as feed); **50:** 21 (clam predator)
S 13 (pentose in); **245** (B.C. edible); **587** (Minas Basin, N.S.); **623** (arctic)
SS 101 (report on B.C. beds); **189** (tissue pentose)

Gauge (for measuring net mesh) (*see* International Commission for the Northwest Atlantic Fisheries; Mesh; Net; Nets)

Gauley, Joseph Robert
J 21: 255 (migrating salmonids glycogen & lactate)

Gay Head, Mass., U.S.A.
J 14: 931 (drift buoy experiments off)

Gear, fishing (*see also* headings listed under Fishing, methods of)
SS 940, 1181 (technological advances); **1387, 1394** (textile products for, & testing methods)

Gear, savings (*see also* International Commission for the Northwest Atlantic Fisheries)
PRA 69: 33 (in Atl. dragger fisheries)
CJG 2 (for haddock & other groundfish)

Gee, Albert Haldane
C 3: 347, **5:** 431 (haddock spoilage bacteria)
SS 301 (haddock spoilage bacteria)

Gee, John Henry
J 20: 105 (ecology of 2 B.C. dace species); **21:** 27 (young Atl. salmon movements)

Geiger, Shirley Evelyn
J 18: 321 (fish muscle biochemistry re rigor); **19:** 321 (dogfish gelatin), 997 (fish & mammal skeletal muscle biochemistry); **20:** 187 (frozen lingcod nucleotides), 1145 (lingcod muscle glycolysis), 1183 (brine-spray frozen tuna); **21:** 857 (steelhead trout rigor)
PRP 114: 19 (prior storage effect on frozen B.C. albacore)
CVG 33 ("chalky" halibut flesh)

Gel (*see also* Gelatin; Seaweed products)
S 821 (casting polyacrylamide)

Gelatin
J 16: 561, 685 (in Pac. herring solubles); **19:** 321 (from Pac. dogfish)

Gelidium (*see* Algae, marine; Seaweed products)

Gelius arcoferus (*see* Sponges)

Gelose (*see* Carrageen)

Genetic pattern
J 14: 797 (possible alteration in fishes)

Genyonemus lineatus (*see* Croaker, white)

Geoduck (*see* Clam, geoduck)

Geology (*see also* Physiography)
C 1906–10: 295 (vicinity of Departure Bay, B.C.); **1915–16:** 93 (vicinity of Passamaquoddy Bay, N.B.)

Georges Bank (off southern N.S.)
J 15: 1451 (herring larvae; water temperatures); **19:** 517 (whitetip shark & dolphin)
PRA 69: 33 (dragger fishery re mesh regulations); **70:** 31 (scallop fishery trends)
SS 1234 (selectivity of scallop drags)

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Georgia, Strait of, B.C. (*see also* Departure Bay; Fraser River; Oceanography, Pacific (NE coastal waters); Juan de Fuca Strait)
C 2: 531 (Tintinnidae); **6**: 65 (annelids)
J 14: 521 (plankton distribution); **15**: 831 (lingcod vital statistics)
B 139 (trawl fishery review)
PRP 4: 3 (economic effects of Fraser R. on); **58**: 17, **109**: 12 (herring populations); **63**: 35, **104**: 11 (lemon sole); **95**: 35 (dogfish feeding habits); **102**: 10, **103**: 8 (Pac. cod fishery trends & tagging); **105**: 22, **107**: 19 (lingcod & tagging); **106**: 10, **111**: 14 (chinook & coho salmon tagging); **111**: 20 (fish landings for mink feed); **112**: 7 (coho salmon feed), 10 (occasional shellfish toxicity); **114**: 13 (pulpmill pollution)
CNG 61 (trawl mesh regulation)
S 56, 75 (Fraser R. estuary plankton distribution); **80** (zooplankton); **112** (phytoplankton)
SS 188 (bacteria); **340** (plankton re oceanography); **476** (*Calanus tonsus* as economic factor)

Georgian Bay, Ont. (*see also* Station, Board Biological, Georgian Bay)
C 1911–14(II): 1 (fishes), 53 (Odonata), 95 (Mollusca), 113 (Ephemerida), 145 (Malacostraca), 165 (leeches), 177 (bass parasite), 195 (Bryozoa), 210 (plants), 213 (fungi), 219 (aquatic plants), 221 (Entomostraca)
J 13: 1 (drift-card movements)
PRC 1: 22, **2**: 21, 32 (sea lamprey stream survey & control)
SS 67 (plants); **68** (algae); **148** (parasitic protozoa)

Geotropism
SS 304 (negative, of periwinkle)

Germany
CCG 4: 9 (trout farm)
SS 628 (fisheries biology & culture)

Germo alalunga (*see* Albacore)

Ghostfish (*see* Wrymouth)

Gibbard, James
B 75 (Canadian Atl. shellfish toxicity)
SS 676 (mussel toxicity); **746** (hibernated oysters coliform bacteria content)

Gibbing (*see* Gutting)

Gibbons, Norman Edwin
C 8: 275, 291 (Atl. fish slime & intestinal flora), 301 (frozen cod, haddock, fillet bacteria)
J 3: 70 (salt cod reddening bacteria), 77 (cod spoilage measurement), 439 (salt concentration in salt cod preservation); **6**: 17 (salt fish reddening bacteriostats)
PRA 4: 5, **9**: 5 (salt fish reddening); **10**: 7 (HCl as preservative); **14**: 13 (reddening control); **15**: 4 (fish spoilage factors)
S 96 (subsequent spoilage of autolyzed sterile muscle)

Gibbonsia elegans montereyensis (*see* Kelpfish, crevice)

Gibbonsia metzi (*see* Kelpfish, striped)

Gibbonsia montereyensis (*see* Kelpfish, crevice)

Gibson, John Sumner Townsend
PRP 74: 13 (distinguishing points of lobster-like crustacea); **78**: 3 (fish age determination)

Gibson Lake, N.B.
PRA 36: 6 (trout angling yields); **43**: 3 (trout growth rate)

Gigartina latissima (a red seaweed)
B 127: Fig. 28 (B.C. resource)

Gigartina stellata (false Irish moss) (*see* Irish moss)

Giglioli, Marco Enrico Clifton
J 12: 287 (Naticidae gastropod egg masses)

Gilbert, Charles Henry
C 1906–10: 215 (new B.C. cottid species)
SS 92, 114, 130, 152, 167, 197, 228. 248, 264, 279 (life history of sockeye salmon, contributions No. 1–10)

Gilbertidia sigalutes (*see* Sculpin, soft)

Giles, Jacqueline Grace
J 18: 295, 303 (quality variations in landed cod & haddock)

Gilgan, Michael Wilson
S 865 (deoxyribonucleoside phosphates synthesis & hydrolysis)

Gill nets and netting (*see* Nets, gill)

Gillespie, Douglas Charles
PRP 99: 18 (incorporating antibiotics in ice blocks); **100:** 12 (aureomycin as preservative)
S 404 (antibiotic ices)
Patent—Canadian No. 552,878 (incorporating antibiotics in block ice)

Gillespie, Gerald Joseph
SS 1187 (lobster traps studied under water); **1214** (Board's 50th anniversary); **1241, 1329, 1362** ("A. T. Cameron" cruises)

Gills (*see also* Physiology, respiratory system; Respiration)
J 6: 392 (pink salmon raker counts); **13:** 291 (re fish spoilage)
PRA 7: 12 (trout survive injury to)
S 277 (green, in N.B. oysters); **279** (green, in P.E.I. clams & other bivalves); **542** (teleost nitrogen excretion via); **563** (skate: epizoic ciliate); **663, 698** (branchial irrigation mechanism)
SS 168 (effects on fish spoilage); **537** (structure & function in oysters)

Gilmartin, Malvern
J 19: 921 (B.C. fiord physical oceanography); **21:** 505 (B.C. fiord primary production)

Giltay, Louis
J 5: 459 (new Atl. Pycnogonida records)
AF 10n (Canadian Atl. Pycnogonida)
S 126 (B.C. Pycnogonida)

Giovando, Lawrence Frank
CNG 68 (B.C. whales & dolphins, & recording of)
CPO 1959-24 (ocean conditions off Juan de Fuca Strait); **1961-18** (Canadian oceanographic information service); **1964-5** (continuous surface temperature recording for fisheries)
S 807 (E subarctic Pac. ocean seasonal temperature structure)
SS 1363 (Canadian oceanographic information service)

Girella nigricans (*see* Opaleye)

Glacial silt (*see* Sediments; Silt)

Glaciers (*see also* Ice; Silt)
J 15: 635 (re climate)

Glass-like crystals (in fishery products) (*see* Crystals)

Glazes; Glazing (of frozen fish) (*see also* Ices; Rancidity; Refrigeration)
B 29: 13 (Pac. halibut)
PRP 14: 12 (preventing cold-storage dehydration); **24:** 18 (desirable properties); **27:** 11 (protecting halibut from yellowing); **27:** 15, **35:** 24 (crack-resistant germicidal; patent); **68:** 52, **84:** 51 (antioxidant); **83:** 45 (time-and-motion study of applying)
CVI 2 (new types)
S 156 (from eutectic solutions); **455** (sardines for canning)

Globicephala macrorhyncha (*see* Whale, pilot (tropical Atlantic))

Globicephala melaena edwardi (*see* Whale, pilot (southern Atlantic))

Globicephala melaena melaena (*see* Whale, pilot (northern Atlantic))

Globicephala scammoni (*see* Whale, pilot (Pacific))

Gloiopeltis (red seaweeds)
B 127: Fig. 23 (*furcata* as B.C. resource)

Glossary
C 2: 495 (for B.C. Cirripedia identification)
J 18: 687 (osteological terms)
B 68: 340, **68R:** 404 (for B.C. marine fishes identification); **155:** 430 (for Canadian Atl. fishes identification)
CNG 65 (Russian–English, for fisheries terms)
AF 9b (for Polychaeta identification)

Gluconic acid and derivatives
S 733, 736 (metabolism in steelhead salmon)

Glucosamine (*see* Chitin)

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Glucose (*see also* Carbohydrates; Glycogen; Nucleotides; Sugars)
J 6: 45 (fermentation by fish bacteria), 441 (as preservative); **17:** 125, 323 (in maturing sockeye blood & tissues), 487 (re glycogen & lactate in exercised trouts)
PRP 114: 19 (in frozen tuna)
S 772 (bacterial oxidation of)

Glue
C 1918–20: 129 (from dogfish & other selachians); **7:** 165 (from fish wastes by dialysis)
B 25: 27 (from haddock wastes)
PRA 16: 11 (from cod skins & heads); **73:** 3 (from fish wastes; extraction & by-products)
PRP 3: 5, **7:** 6, **9:** 23, **71:** 5 (from salmon, halibut, etc. heads & trimmings)

Glycera dibranchiata (*see* Bloodworm)

Glycerides (*see also* Acids, fatty; Lipids; Methanolysis; Oils and fats; *also* other cognate subjects)
B 37: 14, 39, **59, 89** (occurrence & chemistry, in marine animal oils; *see* their indexes)

Glycerol (*see also* Glycerides; Oils and fats)
J 6: 326 (yield from dogfish liver oil)
B 59, 89 (recovery from marine animal oils; applications; *see* their indexes)
PRP 28: 6 (in rubber manufacture); **42:** 8 (as bait preservative); **35:** 24 (in crack-resistant glaze)
S 687, 688 (from methanolysis of glycerides)

Glyceryl ethers
B 59, 89 (in marine animal oils; *see* their indexes)
PRP 63: 32 (chimyl & selachyl alcohol in dogfish liver oil); **65:** 67 (in various liver oils)

Glycogen (*see also* Activity; Enzymes; Glucose; Glycolysis; Lactic acid)
C 3: 437, 457 (re rigor mortis)
J 2: 477 (content in oysters); **16:** 321, **17:** 487, **18:** 125, **19:** 127, 365, 409, **21:** 255 (reserve in trouts); **18:** 641 (in cod rigor muscle); **21:** 255 (reserve in Pac. salmons), 818 (content in scallops)
PRP 20: 16, **23:** 18, **53:** 9 (content in oysters); **53:** 9, **55:** 13 (content in clams & clam nectar)
CVI 3 (in canned B.C. clams)
S 16 (re bivalve respiration); **186** (assay method for oyster); **605** (of maturing sockeye salmon liver)
SS 198, 199 (content in invertebrates & fishes); **212, 448, 449, 528** (re bivalve crystalline style)

Glycolysis (*see also* Activity; Enzymes; Glycogen; Lactic acid)
J 20: 1145 (frozen lingcod muscle); **21:** 818 (in scallop re preservative irradiation), 1539 (in trout re anaesthesia)
S 866 (enzyme in trout tissues)

Glyptocephalus cynoglossus (*see* Flounder, witch)

Glyptocephalus zachirus (*see* Sole, rex)

Goard, Dean Howard
PRP 32: 4 (vacuum in canned salmon)

Goatfish, red or northern (*Mullus auratus*) (red mullet; surmullet)
B 155: 261 (full description)
SS 381 (N.S. occurrence)

Gobiesox maeandricus (*see* Clingfish, flathead)

Goby (species ?)
SS 470 (habits & colour of a B.C.)

Goby, arrow (*Clevelandia ios*)
B 68: 169, **68R:** 360 (full description)

Goby, bluespot (*see* Goby, crested (Pacific))

Goby, crested (Pacific) (*Coryphopterus nicholsii*) (*Rhinogobyops nicholsii*; bluespot or largescale goby)
B 68: 167, **68R:** 358 (full description)
S 290 (B.C. range extension)

Goby, finescale (*Lepidogobius lepidus*)
B 68: 169, **68R:** 359 (full description)

Goby, large-scaled (*see* Goby, crested (Pacific))

Godfrey, Harold
J 12: 499 (Skeena R. whitefishes ecology; correction on **12:** 942); **14:** 153 (salmonid ova mortality from electrofishing); **15:** 331 (sockeye salmon catches re maturity age),

891 (variations in salmon survival); **16:** 329, 553 (pink & chum salmon average weights)
B 101, 106 (rockslide effect on Babine R. salmon); **142:** vi, 43 (B.C. chinook & coho salmon fishery)
PRA 67: 19 (eel feeding)
S 461 (electrofishing in N.B. streams); **722** (distinguishing immature from mature sockeye & chum salmon)

Godthaab Fiord, Greenland
S 623 (infaunal benthos)

Goggler (*see* Scad, bigeye)

Go-Home Bay, Ont. (*see* Station, Board Biological, Georgian Bay, Ont.)

Goldeye (*Hiodon alosoides*) (*Amphiodon alosoides*)
C 1: 425 (Lake Athabaska)
J 8: 221 (Great Slave L.); **17:** 245 (eggs; embryos)
B 72: 80 (Lake Athabaska); **107** (Great Slave L.)
PRP 75: 35 (smoking of)
CCG 3: 12 (record size, Great Slave L.)
CNG 64: 71 (productive capacity)
CVI 13 (constituents; proximate analysis)
S 481 (Man.); **869** (new host for *Paurorhynchus* trematode)
SS 111, 117, 119 (James Bay region & Nelson R.); **358** (Prairie Provinces fishery); **836, 837, 1079** (Man. fishery & management); **1028:** 135 (full description, B.C.)

Goldfish (*Carassius auratus*)
C 1917–18: 167 (resistance to salmon pathogens)
J 7: 169 (cruising speed vs. temperature); **8:** 67 (cruising speed after fin clipping); **11:** 57 (effect of salmon growth hormones); **14:** 655 (B.C. distribution); **15:** 607 (preferred temperatures); **16:** 121 (growth re salinity), 175 (respiration)
PRP 35: 6 ("sunburn" from radiation exposure)
S 445 (lethal temperature limits)
SS 807 (heat-tolerance gain rate); **1208:** 102 (description, B.C.)

Gonads (*see also* Eggs; Milt; Sperm; Testes)
S 829 (histology of cyclic changes in oyster)

Gonatus fabricii (*see* Squids)

Goniaulax (*see* Shellfish occasional toxicity)

Gonichthys coccoi (*see* Lanternfish, Cocco's)

Gonostomata elongatum (*see* Anglemouth, longtooth)

Gonyaulax (*see* Shellfish occasional toxicity)

Goodall, Roger Geoffrey
J 14: 815 (young Pac. salmon light reactions)

Goodrich, Helen Pixell (*see also* Pixell, Helen L. M.)
SS 280 (sporozoan parasites of holothurians)

Goosefish (*see* Monkfish)

Gordon, Howard Scott
J 10: 442 (fishery resources optimal utilization economics); **12:** 85 (catch fluctuations economic factors)

Gorge Creek, Alta.
J 15: 27 (trout survival; correction on **16:** 386); **19:** 373 (trout plantings)

Goudie, Carol
S 641 (storage & antioxidant effects on herring meal)

Gowanloch, James Nelson
C 3: 133 (*Littorina* behaviour & intertidal life), 167 (*Buccinum undatum* intertidal life)
SS 302 (trematode ectoparasite on *Fundulus*); **303** (whelk reactions)

Gracilaria (red seaweeds) (*see also* Algae, marine; Seaweed products)
B 127: Fig. 14 (*verrucosa* as B.C. resource)

Grading (of fishery products) (*see also* Inspection; Odour; Quality tests; Taste tests)
J 15: 701, 717, 729, **18**: 295, 303 (trawled Atl. cod & haddock); **18**: 833, 845 (salt cod)
B 61: 63 (oysters)
PRA 34: 5, 7, **65**: 17 (marine smelt for size)
PRC 2: 53 (mechanical, for freshwater smelt size)
PRP 28: 14, **29**: 12, **30**: 11, **32**: 4, **33**: 20 (B.C. canned salmon)
COF 13, 19 (oysters in shell)
SS 142 (salmon); **258** (lobster cannery sanitation)

Graham, Michael
J 2: 95 (Passamaquoddy Bay region herring study)

Graham, Timothy Richard
J 19: 985 (Atl. herring growth, hatching, spawning, relation); **20**: 435 (herring stocks after an epizootic)

Graham Island, B.C. (*see* Queen Charlotte Islands)

Grainger, Edward Henry
J 9: 65, **11**: 98, **13**: 41, **16**: 403 ("Calanus" Expedition station lists; correction on **16**: 930); **10**: 326 (Frobisher Bay arctic char); **11**: 507 (Canadian Arctic polychaetous annelids); **12**: 899 (Canadian Arctic echinoderms); **16**: 453 (annual oceanographic cycle at Igloolik, N.W.T.); **18**: 663 (Canadian Arctic & Subarctic *Calanus*); **19**: 377 (Foxe Basin arctic zooplankton)
S 808 (*Calanus* as E Canadian Atl. indicator species)

Grajcer, Dov
S 665 (salmon plasma hormone isolation); **776** (salmon blood & testes testosterone)

Grammatostomias dentatus (*see* Dragonfish, torpedo)

Grammicolepid
B 155: 232 (mention of *Xenolepidichthys americanus*)

Grampus, Risso's (*see* Dolphin, Risso's)

Grampus griseus (*see* Dolphin, Risso's)

Grampus orca (*see* Whale, killer (Atlantic))

Grampus rectipinna (*see* Whale, killer (Pacific))

Gran, Haakon Hasberg
J 1: 279 (Bay of Fundy plankton & oceanography)
SS 186 (Canadian Fisheries Expedition Atl. phytoplankton & pelagic Protozoa)

Grand Bank (off Nfld.) (*see also* Groundfish; International Commission for the Northwest Atlantic Fisheries)
J 13: 149 ("jellied" plaice), 297 (sharpness of oceanographic boundaries), 467 (haddock growth rate); **14**: 213 (Scotian Shelf water flow); **15**: 275, 295 (capelin), 355 (haddock); **20**: 1465 (haddock fecundity); **21**: 597 (American plaice fecundity; correction on **21**: 1554)
B 155 (fishes of)
PRA 70: 28 (tagged herring to Iceland); **72**: 23 (squid)

Grand Lake, N.S.
SS 557 (water temperatures)

Grand Manan Channel (*see also* Fundy, Bay of)
J 14: 931 (drift-buoy experiments); **17**: 743 (drift-bottle experiments)

Grand Manan Islands, N.B.
C 1906–10: 270 (halophytic flora)
PRA 41: 14 (lobster growth); **67**: 3 (Irish moss survey)

Graph, polygonal
SS 593, 713 (for polyphase biological data presentation)

Grass, sea; Crab grass; Grass-wrack (*see* Eel-grass)

Gravel permeability (*see* Permeability)

Graveldiver (*Scytalina cerdale*) (burrowing blenny)
B 68: 198, **68R**: 384 (full description)
S 290 (first B.C. records)

Gray, Robert
B 19 (pickling & packing mackerel); **52** (pickled herring curing & packing)

Grayfish; Greyfish (*see* Dogfish, Pacific; Dogfish, spiny)

Grayling (*see* following species; *also* Whitefish, mountain)

Grayling, American (*see* Grayling, arctic)

Grayling, arctic (*Thymallus arcticus*) (*T. a. signifer;* American grayling)
C 1: 433 (Lake Athabaska); **8**: 20 (Hudson Bay)
J 8: 207 (Great Slave L.); **11**: 680 (parasites, B.C.); **13**: 763, **14**: 656 (B.C. distribution); **18**: 679 (osteology; phylogeny)
B 32: 44 (B.C.); **72**: 40, 61, 90 (Great Bear L. & Great Slave L.; N.W.T. & Yuk.); **94**: 16 (Canadian Arctic & Subarctic); **107** (Great Slave L.)
CCG 3: 12 (record size, Great Slave L.)
S 144: 66 (B.C. distribution); **481** (Man.)
SS 815 (Great Bear L.: age, growth. etc.); **1208**: 50 (full description); **1324** (arctic distribution & ecology)

Grayling, southern (*Thymallus arcticus tricolor*)
J 14: 654 (B.C. distribution); **21**: 373 (olfactory apparatus organogenesis)

Graysole (*see* Flounder, witch)

Great Bear Lake, N.W.T.
J 7: 176 (trout), 190 (pike); **10**: 51 (coregonine fishes)
B 72: 31 (fisheries survey); **78** (*Pontoporeia* & *Mysis*); **82**: (coregonine fishes)
CNG 64: 60 (productive capacity)
SS 815 (arctic grayling)

Great Lakes (*see also* the following lakes: Erie; Huron; Michigan; Ontario; Superior; *also* Georgian Bay, Ont.; Limnology)
J 9: 325 (temperature distribution), 329 (currents & surface temperatures); **18**: 273 (morphology); **20**: 1189 (white perch invasion)
PRC 1: 3, 6, 9, 15, 18, 22, **2**: 14, 18, 21, 25, 27, 32, 36 (sea lamprey control measures)
S 495 (current Canadian fisheries research)
SS 759 (annual Canadian landings of fish, 1967–1939); **781** (smelt situation & mortality); **1129** (yellow perch occurrence)

Great Slave Lake, N.W.T.
J 7: 190 (pike); **8**: 1 (limnology), 207 (fishes), 264 (fishing effort); **10**: 413 (whitefish), 486 (bottom fauna); **11**: 827 (lake trout); **12**: 768 (inconnu); **13**: 53 (plankton); **18**: 417 (largest fish); **19**: 113 (longnose sucker growth & reproduction), 501 (*Melosira islanica* diatom periodicity); **20**: 319 (tagged fish movements)
B 72: 45 (fisheries survey); **78** (*Pontoporeia* & *Mysis*); **107** (first 10 years of commercial fishing; correction on **J 14**: 997)
PRC 1: 41 (hydrography; fisheries management); **2**: 3 (research vessel "Stenodus")
CCG 1, 2 (hydography; fisheries; new research vessel; tagging; fish sizes); **3**: 17 (largest fish); **6**: 1 (white & roundnose sucker distinction), 4 (longnose sucker biology)
CNG 64: 60 (fisheries productive capacity)
SS 815 (arctic grayling); **859** (profundal bottom fauna); **894** (estimating fish production); **1029** (beginning of commercial fishery); **1085** (trout)

Green, Kenwood
PRP 22: 8, **33**: 7 (liver oil extraction); **36**: 7 (halibut liver & intestine preservation); **47**: 12 (combined vs. free vitamin D potency)

Green bodies (of polychaete worms)
S 106 (Chaetopteridae intestinal wall)

Green gills (in molluscs) (*see* Gills)

Green Island Lightstation, B.C. (*see also* Lighthouse and lightship oceanographic stations, B.C. coast)
PRP 26: 5, **31**: 16, **98**: 6 (daily sea-water data)

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Greenland (for coastal waters, *see also* Oceanography)
S 441 (recent biological research); **623** (infaunal benthos)

Greenling, fringed (*see* Greenling, rock)

Greenling, kelp (*Hexagrammos decagrammus*) (*Chiropsis decagrammus*)
C 1: 285 (feed; spawning)
B 68: 231, **68R**: 242 (full description)
PRP 109: 9 (as steelhead trout feed in open ocean)
S 290 (Queen Charlotte Is.)

Greenling, long-spined (*see* Combfish, longspine)

Greenling, painted (*Oxylebius pictus*)
B 68: 235, **68R**: 246 (full description)

Greenling, rock (*Hexagrammos superciliosus*) (*Lebius superciliosus*; fringed greenling)
B 68: 234, **68R**: 245 (full description)
PRP 113: 10 (as daggertooth feed in open ocean)
S 81 (creatine in muscle); **290** (W coast Vancouver Is).

Greenling whitespotted (*Hexagrammos stelleri*) ("Tommy cod")
B 68: 233, **68R**: 244 (full description)

Greenough, Maxine Frances (*see also* Elson, Maxine Frances)
J 13: 291 (gill removal effect on spoilage rate); **14**: 617, 775, **16**: 13, 21 (spoilage odours caused by *Pseudomonas*), 771 (antibiotic effect on bacterial enzyme spoilage); **15**: 701, 729 (graded fish & fillet quality); **16**: 223 (landed quality variations in cod & haddock), 539 (nitrite content of treated fillets)
S 551A (antibiotics in Atl. fish spoilage control)

Greenwood, William Hamar
C 1917–18: 5 (B.C. Sea Lion Commission report)

Greep, Roy Orval
S 726 (Atl. hagfish blood corticosteroids)

Greer, Betsy Ann
SS 1135 (pollutants storage ground)

Greiner Lake, Victoria Island, N.W.T.
J 19: 1105 ("relict" fauna; water analysis)

Grenadier, American straptail (*Malacocephalus occidentalis*)
B 155: 223 (full description)

Grenadier, common (*see* Marlin-spike)

Grenadier, filamented (*see* Rattail, filamented)

Grenadier, longnose (*Coelorhynchus carminatus*)
B 155: 220 (probable Canadian occurrence)

Grenadier, rock (*Coryphaenoides rupestris*) (roundnose rattail)
B 155: 220 (full description)
CNG 64: 56 (possible fishery potential)
SS 1324 (arctic distribution & ecology)

Grenadier, roughhead (*Macrourus berglax*) (onion eye; smooth-spined rattail)
B 109: 17 (in Nfld. longline catches); **155**: 221 (full description)

Grenadier, roughnose (*Trachyrhynchus murrayi*)
B 155: 225 (full description)

Grenadier, roughscale (*see* Rattail, roughscale)

Grenadier, smoothscale (*see* Rattail, smoothscale)

Grey . . . (*see* Gray . . .)

Gribble (*Limnoria lignorum*) (*see also* Wood borers)
C 2: 307 (Atl.: distribution factors & life history); **4**: 1, 9 (B.C.: combatting)
PRP 107: 13 (attack prevention)

Grilse (*see* Salmon, Atlantic (biology))

Grindstone (*see* Flounder, starry)

Groll, Arthur Walter
PRP 103: 23 (Hecate Strait current observations, B.C.)
S 454 (ship's roll effect on current meter)

Groninger, Herman Samuel Jr.
J 21: 335 ("milky" flesh in B.C. fishes)

Groot, Cornelis
J 20: 287 (Pac. salmon olfactory & visual responses); 919 (young sockeye salmon migration)

Gross, Louis
C 1918–20: 99 (Atl. fishes bacteriology & putrefaction rates)
MSP 3 (nature & rapidity of fish spoilage)
SS 168 (role of gills in fish putrefaction rate)

Groundfish, Atlantic (*see also* International Commission for the Northwest Atlantic Fisheries; *also* names of groundfishes)
J 15: 1148 (review of investigations); **17** 169 (catches re tidal power project)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CNG 64: 17 (productive capacity)
CSG 2 (offshore landings, 1938–40)
CSS 1, 2, 3, 4, 5, 6 (N.S. landings, 1947–52); **7, 8, 9** (Maritimes area, 1953–55)
S 744 (metal-induced rancidity in)
SS 900 (schooner & otter trawler efficiencies)

Groundfish, Pacific (*see also* names of groundfishes)
CNG 33, 41 (Strait of Georgia winter catches, 1952–55)
S 453, 851: 38, 48 (B.C. resource abundance, distribution, exploitation)
SS 776 (Hecate Strait otter trawling); **1032** (B.C. investigations)

Groundwater
J 15: 1027 (measuring seepage in spawning-bed gravel)

Group (*see* Atlantic Oceanographic Group; Pacific Oceanographic Group)

Grouper, red (*Epinephelus morio*)
B 155: 235 (full description)

Growth; Growth rate (*see also* Age; Age determination; Maturation; *also* names of organisms and other cognate subjects)
C 1914–15: 87 (hake), 95, **3**: 431, **4**: 275, **6**: 293, **8**: 431 (haddock); **1914–15**: 103, **4**: 287 (Atl. cod); **1915–16**: 21 (chinook salmon), 42 (coho salmon); **1917–18**: 111 (pollock); **1918–20**: 7 (Pac. salmons), 73 (muttonfish); **1921**: 22, **4**: 121 (mussels); **1921**: 81 (ciscoes), 119 (anglers); **1**: 12 (lumpfish); **2**: 151, **5**: 18, 42 (sockeye salmon); **2**: 213, 234 (shad), 451 (cunner); **3**: 389 (rainbow trout); **4**: 81 (soft-shell clam), 143 (monkfish), 197 (Jasper Park fishes), 413 (periwinkles); **5**: 193 (Saprolegniaceae marine fungi), 459 (pumpkinseed); **6**: 79 (shrimps), 199, 427 (whitefish)
J 1: 191, **18**: 872 (crabs); **2**: 41, 353, 485, **5**: 71, **10**: 371, **20**: 305 (lobster); **2**: 89 (mussels), 311, **4**: 202, **12**: 93, **13**: 695, **17**: 199, **19**: 531, **21**: 905, 1101 (Pac. salmons); **2**: 359, **7**: 178, **8**: 117, 383, **9**: 169, **11**: 827, **12**: 210, **16**: 269, **17**: 541, **18**: 423, **20**: 491 (trouts); **2**: 379, **11**: 362, **18**: 117 (Atl. salmon); **3**: 132, 145, **5**: 11 (Pac. herring); **4**: 287, **7**: 545 (oysters); **5**: 8 (*Teredo*), 84 (starfish), 337, **6**: 334, **10**: 413, **11**: 284, **12**: 497, **13**: 135, **20**: 265 (whitefishes); **6**: 10, 74, 233, 257, 349, 491, **7**: 221, 430, 552, **10**: 69 (bacteria); **6**: 334, **8**: 469 (ciscoes); **7**: 35, 74 (rats), 190 (pike), 545 (quahaug); **8**: 207 **19**: 113 (Great Slave L. fishes); **8**: 347, **13**: 599 (maskinonge); **8**: 374, **11**: 171, **12**: 187 (soles & flounders; correction on **12**: 942); **9**: 1, **10**: 326, **13**: 843 (arctic char); **10**: 211 (theory), 253, **21**: 139 (phytoplankton); **11**: 660 (scallop); **12**: 35 (albacore), 147 (smallmouth bass; correction on **12**: 942. 238 (eels), 487 (fishes of Ungava Crater & vicinity), 768 (inconnu), 930 (burbot); **13**: 449, **15**: 1451, **18**: 31, **19**: 981, 985, **20**: 435 (Atl. herring); **13**: 467, **17**: 41 (haddock); **14**: 693 (squid), 899 (redfish); **15**: 219 (bearded seal), 295 (capelin), 1269 (Atl. halibut), 1313 (Atl. smelt); **16**: 121 (of fish, re salinity), 721 (calculation of, for fishes); **17**: 81, 501 (pups fed fish parasites), 762 (*Phocanema* in Atl. cod), 775, **21**: 57 (Atl. cod); **18**: 463 (fish of Boar's Back L., N.S.), 513, **21**: 1051 (Pac. cod); **18**: 663 (*Calanus* species); **19**: 113 (longnose sucker), 339 (Pac. halibut); **20**: 105 (daces), 1397 (bigmouth buffalo); **21**: 415 (female sea lions); **21**: 1403 (shrimps)
B 1: 20 (plaice); **2**: 18 (lumpfish); **3**: 13 (angler); **4**: 7 (muttonfish); **15**: 6 (coho salmon); **25**: 16 (haddock); **27** (chinook salmon); **34** (Pac. oyster); **56**: 44 (whitefish); **62**: 19 (Dungeness crab);

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82: 4 (coregonine fishes); **118** (ringed seal); **119** (types of growth; methods of determination & presentation; *see* its index); **130**: 14 (swordfish); **131**: 22 (Atl. oyster); **132**: 16 (pilot whale)

PRA 1: 10 (haddock); **6**: 5, **41**: 14, **64**: 3 (lobster); **11**: 10 (scallop); **28**: 3 (starfish); **30**: 3 (quahaug); **32**: 3 (black bass); **35**: 18 (bar clams); **37**: 14 (oyster drill); **45**: 6 (oyster); **63**: 3 (green crab); **67**: 6, **72**: 3 (Atl. cod); **67**: 26 (redfish); **69**: 7 (boring sponge)

PRC 1: 31, **2**: 51 (*Triaenophorus*); **2**: 14 (sea lamprey ammocoetes)

PRP 2: 7, **85**: 80, **86**: 18 (coho salmon); **4**: 3 (diatoms), 9 (shrimps); **6**: 9, **61**: 4 (clams); **8**: 11, **11**: 10, **26**: 3, **80**: 52 (trouts); **18**: 10, **30**: 3, **43**: 6, **45**: 12, **47**: 10, **49**: 11, **67**: 32, **73**: 65 (Pac. herring); **36**: 3, **91**: 21, **99**: 30, **102**: 16 (sockeye salmon); **36**: 3 (squawfish); **44**: 14, **99**: 14, **105**: 22 (lingcod); **56**: 6 (eulachon); **63**: 35, **72**: 24, **73**: 68, **86**: 13 (lemon sole); **86**: 18 (chum, chinook & pink salmon); **103**: 8 (Pac. cod); **105**: 3 (shipworm); **107**: 7 (Pac. oyster); **109**: 16 (Dungeness crab)

CAG 2 (walrus)

CCG 6: 4 (Great Slave L. longnose sucker)

CJG 2 (redfish; haddock); **3** (small redfish); **4** (small redfish; American plaice)

CNG 60, 63 (Pac. herring)

COF 6 (starfish)

CSG 1, 3, 10 (eel grass); **9** (clam); **24** (lobster)

NRB 1: 45 (Atl. salmon); **6**: 14 (haddock); **9** (trouts); **14**: 76 (Atl. cod); **15**: 13 (Atl. dogfish); **17**: 87 (capelin); **18**: 26 (lobster)

NSB 2: 4, **15**: 20 (lobster)

S 488 (tagged vs. untagged brook trout); **545** (mussel); **602** (*Bankia* shipworm); **731** (problem with redfish)

SS 221 (echinoderms); **224** (young sockeye); **305** (periwinkle); **358** (Prairie Provinces fishes); **409** (ciscoes); **461** (littleneck & butter clams); **519** (relative. of Dungeness crab); **556** (barnacles, re illumination); **561, 599, 600** (softshell clam); **657** (quahaug growth indices variation); **819** (re fish populations); **855** (Lake Manitoba sauger & walleye); **1195** (young redfish); **1247** (changes, re Atl. cod feeding)

Growth factor in fishery products (*see also* Feedstuffs; Poultry feed)

PRP 80: 52 (salmon roe & milt for trout); **92**: 10, **94**: 27 (herring solubles & meal for chicks); **93**: 20 (various fishery products for yeast)

Grubby (*Myoxocephalus aeneus*) (little sculpin)

C 1918–20: 111 (Cape Breton, N.S.); **2**: 103 (high-temperature resistance)

J 16: 826 (Miramichi R., N.B.)

B 155: 354 (full description)

S 234 (Malpeque Bay, P.E.I.); **587** (Minas Basin, N.S.)

Grunt-fish (*see* Sculpin, grunt)

Guanine (*see also* Pearl, artificial)

B 64: 1 (in smelt skin)

PRA 73: 9 (recovery from fish skin glue manufacture)

PRP 55: 18 (in herring scales)

S 818 (traced incorporation into salmon milt deoxyribonucleic acid)

Guiding of migrating fish (*see also* Lamprey, sea; Migration; Reactions of organisms; Repellents)

J 10: 548 (by lights & bubbles)

B 114 (past hydroelectric dams); **117** (by cables, chains, bubbles, dye, etc.)

PRC 1: 8 (lampreys by electricity)

PRP 92: 14 (by lights & bubbles); **99**: 24 (by dye, odour, sound, etc.); **95**: 53 (by odours); **106**: 14 (by chains & cables)

S 356 (Pac. salmon)

Guillemots (*Uria aalge* and *U. lomvia*) (*see also* Murres)

SS 975 (ecological relations)

Gulf of . . . (*see* name of gulf)

Gulf Stream (*see also* Currents: Drift: Oceanography, Atlantic (NW open waters))

J 4: 339 (temporary migrations); **10**: 155 (re Scotian Shelf slope waters)

B 134: 51 (re Atl. oceanography)

PRA 20: 11 (westward trend)

SS 677 (significance of temporary migrations)

Gulland, John Alan
S 756 (tagged cod crosses Atl. ocean)

Gulls (*see also* Birds; Predators, bird)
J 14: 729 (herring: as lobster predator)
B 17 (various Pac. species as herring predators)
PRA 35: 3 (Atl. clam predator)
PRP 15: 21 (B.C. clam predator); **119:** 9 (preying on B.C. herring spawn)
S 301 (herring: feeding habits); **836** (of Strait of Belle Isle)
SS 328 (glaucous-winged: as B.C. predator); **622** (sockeye salmon predator); **1342** (mew: nesting colony)

Gulper, pelican (*Eurypharynx pelecanoides*)
B 155: 152 (description)

Gunasekera, C.
SS 1114 (Ceylon fish salting & drying); **1403** (Ceylon fish preservation); **1404** (Ceylon fishery by-products); **1405** (Ceylon dolphins commercial use)

Gunasekera, L. D.
SS 1115 (Ceylon trawled fish physical analysis); **1406** (Ceylon trawled fish keeping quality); **1408** (Ceylon fishes chemical analyses)

Gunderson, Fred J.
SS 440 (new Pac. coast fish records)

Gunnarsson, Gudni Kristinn
J 13: 207 (nitrite ice & dips for gutted fish preservation)
PRA 54: 7 (absorption refrigeration system in industry); **60:** 3 (fish stained by impure salt)

Gunnel (*Pholis clemensi*)
J 21: 933 (new species, B.C.)

Gunnel, banded (*Pholis fasciata*) (mottled gunnel)
C 8: 36 (Hudson Bay)
B 155: 303 (full description)

Gunnel, crested (*Pholis laeta*) (*P. lateus*; bracketed blenny)
B 68: 180, **68R:** 381 (full description)
PRP 95: 35 (as dogfish feed)
S 290 (B.C. range extensions)

Gunnel, mottled (*see* Gunnel, banded)

Gunnel, penpoint (*Apodichthys flavidus*) (penpoint blenny)
B 68: 181, **68R:** 382 (full description)
S 290 (B.C. range extensions)

Gunnel, rock (*Pholis gunnellus*) (butterfish; rock eel; tansy; tissy)
C 1902–05: 87, **1918–20:** 112 (Cape Breton, N.S.)
J 16: 827 (Miramichi estuary, N.B.)
B 155: 304 (full description)
S 234 (P.E.I.); **587** (Minas Basin, N.S.)

Gunnel, rockweed (*Xererpes fucorum*) (fucus blenny)
B 68: 181, **68R:** 383 (full description)
S 290 (B.C. range extension)

Gunnel, saddleback (*Pholis ornata*)
C 8: 161 (nematode infection)
B 68: 179, **68R:** 380 (full description)

Guppy (*Lebistes reticulatus*)
J 21: 757 (feed supply re fecundity)

Gurnard, common (*see* Searobin, common)

Gurnard, flying (*Dactylopterus volitans*)
B 155: 380 (full description)
S 235 (off N.S.)

Gurnard, northern striped (*see* Searobin, striped)

Gurnet (*see* Sea raven, Atlantic)

Gutting; Splitting; Cleaning (of fish) (*see also* names of commercial fishes)
J 13: 26 (proper procedure), 291 (benefit of gill removal)
B 1: 11 (plaice); **3:** 9 (angler); **9:** 5 (fish for drying); **19:** 7 (mackerel for pickling); **20:** 10 (haddock for ice fillets); **24:** 8 (mackerel for canning); **49:** 5 (halibut); **52:** 2 (herring); **100, 103** (on trawlers)
PRP 79: 44, **83:** 40 (gibbing machine for anchovy)
CFI 8 (home-made cannery equipment for)

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NSB 9: 9 (Atl. cod)
SS 1410 (freshwater fish)
Patent—Canadian No. 523,189 (for fish-cleaning machine)

Guttmann, Abraham
J 9: 129 (cod-liver protein vitamin B_{12}); **12:** 637 (extracts & liver enzymic hydrolysates)
PRA 49: 5 (cod liver residue use); **67:** 29 (fish protein concentrate from offal); **68:** 17 (liver preservation procedure); **73:** 3 (glue, etc. from fish skins)
S 677 (fish liver paste)

Gwyn, Agnes Margaret
J 5: 11 (Pac. herring vertebral development)

Gymnast, Atlantic (*Xenodermichthys socialis*)
B 155: 99 (full description)

Gymnelis viridis (*see* Doctor, fish)

Gymnocanthus (species?) (a sculpin)
B 73: 3 (young, Labrador & Baffin Is.)

Gymnocanthus galeatus (sculpin)
C 8: 27 (Hudson Bay)

Gymnocanthus tricuspis (*see* Sculpin, arctic staghorn)

Gymnosomata
S 616 (NE Pac.)

Gymnothorax funebris (*see* Moray, green)

Gyral (*see* Alaska, Gulf of; Oceanography, Pacific)

H

Habitat (*see also* Environment)
J 16: 147 (& associated fauna of 4 Ont. stream fishes)
SS 1397 (need for)

Hachey, Henry Benedict
C 6: 465 (Hudson Bay fishery survey: introduction), 489 [report on his Hudson Bay Copepoda collections; by A. Willey]; **7** (Hudson Bay hydrography & hydrodynamics)
J 1: 121, 133, 171, **11:** 32 (Bay of Fundy hydrography), 227 (storm effect on inshore waters); **4:** 339 (temporary Gulf Stream migrations), 378 (Canadian Atl. surface temperatures), 424 (Saint John, N.B., harbour hydrography); **5:** 377, **7:** 1, **10:** 148 (Scotian Shelf hydrography); **7:** 355 (Canadian Atl. sea temperature cycles); **9:** 325 (Great Lakes vertical temperature distribution); 198 (Belle Isle Strait oceanography)
B 111: 195 (Gulf of St. Lawrence surface waters; correction on **J 16:** 386); **134** (oceanography & Canadian Atl. waters)
PRA 11: 3, **21:** 14, **42:** 4, **43:** 7 (W Atl. sea temperature trends & cycles); **11:** 6 (cyclones effect on hydrography); **16:** 3, **29:** 3 (Scotian Shelf hydrography); **20:** 11 (Gulf Stream westward shift ?); **23:** 13 (jellyfish forecast hurricane); **24:** 6 (water temperature re cod fishery)
S 136 (Atl. ocean water transgressions); **139, 178, 201, 204, 210** (Scotian Shelf oceanography); **182** (exceptional central Atl. sea temperatures); **306:** 187 (ocean research facilities); **316** (Atl. influence in Hudson Bay); **317** (Labrador Current vertical temperatures); **358** (sea movements near Sambro lightship, N.S.); **395** (waters of ICNAF area); **402** (Hudson Bay hydrography); **414** (water replacements significance to a fishery); **471** oceanographic features of submarine topography); **483, 590, 773** (Canadian oceanography review reports)
SS 375 (Hudson Bay a desert sea); **456** (air vs. sea temperatures in Passamaquoddy Bay); **483** (meteorology re coastal fisheries); **484** (derivation of Bjerknes' hydrodynamical concept); **543** (Hudson Bay water circulation); **544** (a sun halo complex); **677** (Gulf Stream temporary migrations); **883, 1075, 1154** (current Canadian oceanography); **932** ("Sackville" oceanographic research vessel); **961** (Canadian physical oceanography, 1948–51); **1023** (Continental Shelf); **1074** (storm surges); **1116** (oceanography in International Geophysical Year); **1319, 1364** (Canadian oceanographic cooperation)

Haddies, "chicken"
B 25: 27 (from haddock)

PRA 19: 11 (from haddock, cod, hake: yield on canning); **25**: 5 (canning; correction on **27**: 17); **31**: 8 ("Iceland pack")

CFI 5 (candling for parasitic worms); **8** (home-made cleaner)

CHO 30 (canning, from haddock, hake, cusk)

Haddies, finnan

C 1917–18: 175, **3**: 467 (curing & smoking, from haddock), 179 (bacteriology, of haddock); **4**: 27 (bactericidal action of haddock smoking)

B 25: 27 (from haddock)

PRA 4: 6, **9**: 4 (preparation)

CHO 26, 35, 39 (smoke curing)

Haddock (biology) (***Melanogrammus aeglefinus***) (*see also* International Commission for the Northwest Atlantic Fisheries)

C 1901: 61 (re sardine & herring fishery); **1902–05**: 91 (trematode parasites); **1914–15**: 95 (growth; maturity; fishery); **1915–16**: 86 (serially striped); **1**: 413 (body temperature); **3**: 423 (Bay of Fundy fishery fluctuations); **4**: 117 (thyroid iodine content), 257, **8**: 275, 295 (slime & intestinal flora); **4**: 265 (life history); **5**: 431 (flora of living fish); **6**: 241 (migrations; populations interrelations); **8**: 409 (young, near Halifax)

J 11: 250 (Belle Isle Strait), 535 (feeding re sexual cycle; correction on **14**: 997); **11**: 593 (stock & recruitment); **14**: 856 (flesh nematodes); **15**: 355 (drumming muscles), 517 (Nfld. landings), 698, **16**: 449 (atypical flesh colour), **15**: 1229, 1239 (age determination by scale or otolith; corrections on **16**: 386, 929), 1371 (mortality rates); **16**: 820 (Miramichi estuary, N.B.); **17**: 41 (growth & maturity off Lockeport, N.S.), 175 (Passamaquoddy Bay stock)

B 7: 12 (Langerhans islets tissue re insulin); **25** (description, life history; products); **69** (fishery); **155**: 202 (full description)

PRA 1: 10 (3 NW Atl. populations); **4**: 10, **7**: 10 (sea temperatures re fishing); **14**: 3 (local populations); **15**: 3, **64**: 10 (tagging); **15**: 10 (effects of spawning on feeding); **24**: 12 (SW N.S. fishery); **28**: 9 (spring run); **58**: 17 (bait for); **69**: 33 (savings gear)

CJG 1–11 inclusive (Nfld. research & landings, 1953–63)

CNG 64: 12 (productive capacity)

CSG 2 (offshore landings, 1939–40); **1–6** inclusive (N.S. landings, 1947–52); **7, 8, 9** (Maritimes landings, 1953–55)

NRS 6 (occurrence & biology, Nfld.)

S 38, 52 (muscle lactic acid before rigor); **41** (bacteriology of living fish); **111** (myxosporidian parasite); **272** (feed); **413** (NW Atl. stocks); **610** (distinction of stocks); **850** (selectivity of hooks & trawl meshes); **874** (trawl mesh selectivity)

SS 171 (tide effect on distribution); **343** (eel elvers as feed); **344** (fishery statistics); **573, 574** (supposed "three-eyed" false); **673** (possible hybrid with cod); **1126** (sea temperatures re fishery); **1184, 1192, 1211, 1212, 1238, 1254, 1289, 1300, 1325, 1335, 1336, 1361, 1368** (length frequencies)

Haddock (products) (*see also* Fillets; Haddies)

C 1918–20: 99, **3**: 347, 441, 457, **4**: 227 (bacterial & hydrolytic flesh deterioration); **2**: 121 (insulin from); **3**: 467 (muscle tensile strength); **4**: 257, **5**: 431, **8**: 275, 291 (whole fish, slime & intestinal flora); **4**: 317 (muscle tryptic hydrolysis); **6**: 1 (muscle soluble proteins), 375 (muscle thermal properties re freezing); **7**: 57, **8**: 227 (flesh & skin effect on dog gastric secretion); **8**: 123, 131 (muscle nonprotein N partition), 301 (frozen fillet bacteriology), 531 (artificial horn-like plastic from muscle)

J 1: 179 (muscle non-protein N); **3**: 473 (pyloric caeca enzymes); **5**: 221 (tryptic enzymes); **6**: 53 (surface spoilage concept); **7**: 96 (muscle & viscera thiaminase); **8**: 111 (value of storing near 32°F); **12**: 329 (spoilage assessment & quality standards), 641 (liver extracts & hydrolysates); **13**: 22 (spoilage rates of gutted & filleted), 209, **16**: 539 (nitrite ice & dip treatments); **13**: 291 (effect of gill removal on storage

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quality), 861 ("bilgy" odour in poorly iced), 869 (animal feed from viscera); **14**: 617, 775, **16**: 13, 21 (flesh spoilage odours caused by *Pseudomonas*, etc.; correction on **14**: 998); **14**: 856 (nematodes in fillets); **15**: 517 (quality of round & gutted Nfld. landings), 698, **16**: 449 (atypical flesh pigmentation); **15**: 701, 717, 729, **18**: 295, 303 (seasonal variations in fish & fillet graded quality); **18**: 85 (protein quality of protein concentrate, liver & viscera meal), 893 (proximate composition); **19**: 591 (protein fractionation); **21**: 827 (storage life after gamma irradiation), 1345 (rancidity evaluation)

B 7: 21 (insulin from); **20** (processing & handling of frozen fish & fillets); **25**: 27 (products & marketing); **59**: 34, 69, 405, **89**: 29, 69, 339 (liver oil characteristics, vitamins, etc.); **100, 103** (handling fish on trawler); **138** (antibiotic dip for fillets)

PRA 2: 3 (flesh & skin: stimulation of mammal digestive action); **5**: 10 (shipping frozen fillets; cold storage changes in fillets); **15**: 4 (spoilage rate); **20**: 3 (trimethylamine oxide reduction during spoilage); **38**: 10 (freshly cut fillet spoilage); **40**: 7 (chlorinated water treatment of fillets); **55**: 11 (B vitamins in round & filleted), 17 (fillets from washed vs. unwashed fish); **60**: 9 (quality of retail fillets); **65**: 24 (acid ensilage from offal); **67**: 29 (protein concentrate from offal); **73**: 4 (glue from skins)

CVI 17 (flesh amino acids & vitamins A & B)

S 31 (muscle tensile strength); **38, 52** (muscle lactic acid); **101** (muscle heat capacity re freezing); **324** (freezing denaturation); **349** (unsaturated fatty acids in); **439** (fillets vitamins B); **565** (seaweedy odour in); **566** (cold storage life); **677** (liver paste recipe)

SS 273 (insulin); **301** (bacterial spoilage); **471** (effect on gastric juice secretion); **619** (precipitation test to distinguish from cod flesh); **1202, 1328** (protein concentrate from)

Haddock, Jerusalem (*see* Opah)

Haddon, Kathleen
SS 49 (a copepod parasitic on B.C. polychaete); **50** (*Hersilia vancouverensis*)

Hadropterus maculatus (*see* Darter, blackside)

Hagfish, Atlantic (*see* Hagfish, northern)

Hagfish, black (*Polistotrema deani*)
B 68: 49, **68R**: 66 (full description)

Hagfish, northern (*Myxine glutinosa*) (Atlantic hagfish)
J 17: 731 (N.B. record)
B 155: 20 (full description)
AF 12d: 2 (description)
S 726 (blood corticosteroids)
SS 136 (eggs); **380** (brain); **703** (skin pigment)

Hagfish, Pacific (*Polistotrema stoutii*)
B 68: 49, **68R**: 67 (full description)
PRP 29: 8, **75**: 57 (description; habits; predation by)
CNG 35 (in prawn traps)

Hake, blue (*see* Antimora, blue)

Hake, longfin (*Urophycis chesteri*)
B 155: 215 (full description)

Hake, mud (*see* Hake, squirrel)

Hake, offshore (*Merluccius albidus*)
B 155: 205 (full description)

Hake, Pacific (*Merluccius productus*)
B 59, 89 (oils; *see* their indexes)
PRP 54: 4 (liver oil properties & vitamin A); **79**: 35, **95**: 35 (in fish stomachs); **111**: 20 (landings for mink feed)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
S 389 (in B.C. trawl fishery); **544** (new trematode parasite of)

Hake, red (*see* Hake, squirrel)

Hake, silver (*Merluccius bilinearis*) (whiting)
C 1902–05: 91 (trematode parasites); **2**: 120 (insulin in)
J 7: 96 (thiaminase in); **14**: 867 (nematodes in); **15**: 625 (distribution & landings); **16**: 819 (Miramichi Bay, N.B.)
B 155: 205 (full description)
CNG 64: 18 (productive capacity)
NSB 8: 27 (life history)
S 437 (Gulf of St. Lawrence); **555** (gear selectivity for)
SS 7 (adaptation to freshwater)

Hake, spotted (*Urophycis regius*)
B 155: 216 (full description)
NSB 8: 27 (life history)

Hake, squirrel (*Urophycis chuss*) (ling, mud hake, red hake) (*see also* Hakes (Atlantic); Hake, white)
C 1902–05: 91 (trematode parasites); **1914–15**: 87 (life history from scales); **1918–20**: 99 (putrefaction rate)
J 7: 96 (thiaminase in); **16**: 820 (Miramichi R., N.B.)
B 155: 217 (full description & possible identity with white hake)
CNG 64: 18 (productive capacity)
NSB 8: 25 (life history)
S 54: 153 (body, liver & gonad weights)

Hake, white (*Urophycis tenuis*) (*see also* Hakes (Atlantic); Hake, squirrel)
C 1902–05: 89 (Canso, N.S.); **1914–15**: 87 (life history); **8**: 275 (slime & intestinal flora)
J 5: 221 (tryptic enzymes); **11**: 251 (Belle Isle Strait); **14**: 867 (nematodes in); **16**: 820 (Miramichi Bay, N.B.); **17**: 731 (large specimen)
B 7: 21 (insulin in); **59, 89** (oils; *see* their indexes); **155**: 217 (full description & possible identity with squirrel hake)
CNG 64: 18 (productive capacity)
CSG 2 (Atl. offshore landings, 1938–40)
CSS 1–6 inclusive (N.S. landings, 1947–52)
NSB 8: 25 (life history)
S 38, 52 (tissues lactic acid); **111** (Myxosporidia parasites); **234** (P.E.I.)
SS 1368 (length frequencies)

Hakes (Atlantic) (species uncertain)
C 1: 297 (freezing)
PRA 11: 12 (Bay of Fundy fishery); **19**: 11, **25**: 5 (canning as "chicken haddies"; correction on **27**: 17); **23**: 10, **31**: 3 ("putty" flesh & avoidance); **58**: 17 (as groundfish bait); **73**: 3 (skins for glue)
CHO 30 (canning as "chicken haddies"); **36** ("putty" flesh condition)
CJG 5–11 inclusive (Nfld. investigations & landings, 1957–63)
SS 171 (tide effect on distribution)

Halargyreus (species ?)
B 155: 187 (mention of, as possible Canadian Atl. occurrence)

Halfbeak, common (*Hyporhamphus unifasciatus*) (*H. roberti*)
J 16: 507 (N.B., first Canadian record)
B 155: 168 (full description)

Halibut, Atlantic (biology) (*Hippoglossus hippoglossus*) (*see also* International Commission for the Northwest Atlantic Fisheries)
C 1902–05: 91 (trematode parasites); **1914–15**: 19 (eggs & larval stages); **1**: 409 (larvae, N.S.); **2**: 121 (Langerhans islets tissue re insulin); **8**: 275 (slime & intestinal flora)
J 12: 85 (landings re price & cost of living); **15**: 661 (catches re air & ocean temperatures), 1269 (biology & fishery); **16**: 821 (Miramichi estuary, N.B.); **21**: 837 (movements on banks)
B 7: 21 (Langerhans islets re insulin); **71** (fishery); **109, 141** (catches incidental to cod longlining); **155**: 392 (full description; economics)
PRA 50: 3, **61**: 4 (tagging & recoveries)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CNG 64: 15 (productive capacity)
CSG 2 (offshore landings, 1938–40)
CSS 1–6 inclusive (N.S. landings, 1947–52); **7, 8, 9** (Maritimes landings, 1953–55)
NSB 14: 7 (life history)
S 52 (muscle lactic acid); **413** (NW Atl. stocks); **819** (liver fatty acids distribution re metabolism)
SS 169 (growth, from scales); **1124** (fishery); **1256** (bibliography)

Halibut, Atlantic (products)
C 2: 121 (insulin from); **8**: 275 (effects of slime & intestinal flora)
J 7: 96 (thiaminase in muscle & viscera); **16**: 43 (frozen fillets lipid hydrolysis); **18**: 483 ("chalky" vs. normal flesh composition variations)
B 7: 22 (insulin); **20** (frozen fillets); **89**: 29, 61, 329, 376 (liver oil)

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PRA 2: 7 (cold storage changes in fillets); **5**: 10 (shipping frozen fillets); **6**: 12, **22**: 7 (bacterial yellow discoloration of skin); **20**: 3 (trimethylamine oxide reduction during spoilage)

CVI 17 (nicotinic acid vitamin in flesh)

S 52 (flesh lactic acid); **324** (protein denaturation on freezing & storage); **566** (cold storage life)

SS 273 (insulin)

Halibut, bastard (*see* Flounder, arrowtooth)

Halibut, Greenland (*Reinhardtius hippoglossoides*) (turbot)

C 1902–05: 90 (Canso, N.S.), 91 (trematode parasites)

J 14: 867 (nematodes in); **21**: 1129 (distribution; synonymy; variation)

B 109, 141 (catches & value in Nfld. cod longlining experiment); **155**: 401 (full description)

CNG 64: 17, 56 (productive capacity)

NSB 14: 11 (Nfld., description)

Halibut, Pacific (biology) (*Hippoglossus stenolepis*)

C 1914–15: 1 (B.C. fishery investigation), 19 (eggs & larval stages); **3**: 15 (gill cavity parasitic copepod)

J 13: 357, **15**: 661 (catches re air & sea temperatures); **19**: 335 (otolith photography), 339 (growth rate changes, from otoliths); **21**: 335 ("milky" flesh condition)

B 7: 14 (Langerhans islets, re insulin); **68**: 311, **68R**: 184 (full description); **119** (catch curve; fishing rate during recruitment)

PRP 33: 23 (indigenous gut bacteria); **40**: 3 (description); **62**: 11 (common names); **67**: 31 (tagging)

CNG 64: 45 (productive capacity)

CVG 33 ("chalky" flesh condition probable cause)

S 41 (bacteriology of living fish); **364** (protection & legislation effects on fishery); **453** (B.C. resource abundance, distribution, exploitation); **819** (liver fatty acids distribution re metabolism); **851**: 33 (history & future prospects of B.C. fishery)

SS 94 (scales re age & conservation); **122** (crustacea as feed); **994** (fishery management); **1304** (productive capacity)

Halibut, Pacific (products)

C 7: 141, 425 (bacterial skin discoloration), 165 (glue from wastes); **8**: 311 (freezing denaturation of flesh)

J 4: 174, 396, **6**: 103, 113 (liver oil processing & vitamins); **4**: 327, **5**: 36, 152, 267, **10**: 69 (various preservatives for flesh & fillets); **4**: 367 (spoilage bacteria trimethylamine generation); **5**: 267 (frozen muscle swelling & drip); **6**: 119 (muscle bacteria populations fluctuations); **7**: 35, 51, 74 (flesh proteins & vitamins biological value); **8**: 74 (Maillard browning of flesh); **12**: 85 (landings re price & cost of living)

B 7: 14 (insulin from); **12, 29, 49** (bacterial yellow discoloration of skin & control); **37**: 149, **59, 89** (oils; *see* their indexes); **126**: 29 (changes in refrigerated seawater)

PRP 3: 5, **7**: 6, **9**: 3 (glue from heads); **5**: 7, **6**: 3, **7**: 3, **11**: 14, **18**: 7, **27**: 11 (cold storage discoloration & its control); **12**: 3, **22**: 8, **33**: 7, 8, **35**: 13, **36**: 7. **44**: 4, **45**: 21, **46**: 12, **47**: 12, **48**: 9, **50**: 4. **54**: 15, **63**: 43, **82**: 20, **88**: 51, **103**: 11 (liver & other organs: yield, processing, oil yield, vitamins A & D); **14**: 2, **18**: 7, **27**: 11, **37**: 12, **42**: 16 (cold storage effects on quality); **19**: 20, **53**: 9 (nutritive values); **20**: 9, **33**: 13, 17, **41**: 15 (icing fish & its effects); **26**: 12 (cooling & freezing rate curves); **32**: 9, **45**: 7 (freezer studies); **37**: 7 (smoked); **38**: 3, **39**: 13, **43**: 10. **44**: 12, 16, **47**: 5, **48**: 19, **49**: 3, **83**: 35, **84**: 51 (effect of various preservative treatments on fillet quality & drip); **45**: 4 (canning cheeks in jelly); **48**: 9 (liver oil industry history); **50**: 16 (thawing fish); **56**: 7 (dehydrated); **63**: 43 (liver oil expansion coefficient); **73**: 58 (apparatus for scrap flesh recovery); **81**: 86 (insulin source); **84**: 68, **88**: 61 (analyses of "chalky" & "milky" flesh); **88**: 51 (cholesterol from liver oil); **88**: 57, **92**: 21 (freezing fish at sea); **92**: 23, **94**: 27 (flesh ribose re browning reaction); **93**: 20, **96**: 16 (solubles for ruminant feed); **105**: 19 (Na & K content of flesh); **108**: 10, **110**: 16 (holding fish in refrigerated seawater, & its effects)

CVI 6 (liver oil vitamin A), **17** (nicotinic acid vitamin in flesh)

CVG 33 (probable cause of "chalky" flesh)

S 89 (bacterial yellow skin discoloration); **156** (ice glaze for); **434** (flesh Na & K content); **593** (liver oil anti-hypercholesterolemic activity)
SS 316 (B.C. harvest); **454, 581** (marketing changes); **474, 525, 526, 527** (preservation at sea); **659** (viscera oil vitamins)

Halichoerus grypus (*see* Seal, gray)

Halifax Harbour, N.S. (*see also* Oceanography, Atlantic (NW coastal waters))
C 2: 69 (water circulation & pollution); **8:** 409 (young haddock)
B 61 (cod)
PRA 26: 28 (cod migrations); **53:** 3 (fluctuating seawater temperatures)
S 139 (jellyfish); **226,** 235 (unusual fishes in)

Halifax Lightship, N.S.
PRA 51: 17 (surface sea temperatures)

Haliotis (*see* Abalone)

Halkett, Andrew
SS 26 (freshwater ling eggs); **63** (check-list of Canadian fishes)

Hallam, Jack Charles
J 16: 147 (habitat of 4 Ont. stream fishes)

Halocline (*see* Oceanography; *also* note under the headings Density *and* Salinity; Density of natural waters; Oceanography)

Halophiles (*see* Bacteria; Moulds; "Reddening"; Salt; Salt fish)

Halophytes (*see also* Seaweeds)
C 1906–10: 270 (terrestrial, Grand Manan coastal region, N.B.)

Halsydrus maximus (*see* Shark, basking)

Hammerhead, smooth (*Sphyrna zygaena*) (*Cestracion zygaena*; common hammerhead; hammerhead shark)
J 16: 504 (N.S. record)
B 155: 40 (full description)
AF 12e: 10 (description)
S 226 (in N.S. waters)

Hampton, William Forsey
NS 4 ("pink" fish cause & prevention); **5** (dogfish utilization); **9** (cod preparation for salting); **12** (food preservation principles); **13** (good canning practices)

Hanavan, Mitchell Grattan
J 17: 221 (Gulf of Alaska epipelagic fishes)

Handlining (*see also* Longlining)
PRP 107: 19 (for lingcod)

Handsaw fish (*see* Lancetfish (Pacific); Lancetfish, longnose)

Hanslip, Arthur Rennie
J 16: 391 (exercised trout blood changes); **17:** 487 (exercised trout glycogen, glucose & lactate changes)

Haqq, Samuel Ainul
J 19: 169 (lingcod & Pac. cod frozen fillet fat hydrolysis)

Harbour, artificial
S 738 (for Ceylon fishery trawlers)

Hardening of oils (*see* Hydrogenation; Stearine)

Harding, Kenneth Fairhurst
J 4: 59 (pilchard oil fatty acid composition)
PRP 36: 10 (hair seal & sea lion oils)
B 59 in part (marine animal oils technology)
S 152 (oil iodine value determination)

Hardtail (*see* Runner, blue)

Harper, Esther Louise
S 347 (semi-micro dissolved oxygen determination)

Harper, Francis
C 1: 419 (description of northern fishes collection)

Harpoon; Harpooning
B 98: 16 (commercial for beluga); **130:** 27 (commercial for swordfish)
PRP 34: 16 (for porpoises); **105:** 6, **109:** 14 (commercial for whales, with antibiotic injection)

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Harrington, Robert Whiting Jr.

J 11: 529 (anti-vitamin B_1 diet effect on fish)

Harriotta raleighana (*see* Chimaera, longnose)

Harris, Roy Henry Desmond

J 19: 113 (longnose sucker growth & reproduction)

CCG 6: 4 (Great Slave L. longnose sucker)

Harrison, Francis Charles

C 1917–18: 149 (N.B. hatchery salmon disease), 179 (smoked haddock bacteriology); **1**: 279 ("rusty" salt herring)

B 12 (Pac. halibut yellowing bacteria)

S 41 (marine fish bacteriology); **89** (Pac. halibut yellowing bacteria)

SS 229 (red-discolored cured cod); **249** (canned lobster blackening); **281** (bacteria re canning)

Harrison, John Stanley Milton

J 21: 845 (air-lift pumping of fish)

B 126 (refrigerated seawater fish transport & storage)

PRP 70: 4 (refrigerative insulation studies); **74**: 23 (railway refrigerator car tests); **76**: 76 (automatic smoke generator); **77**: 108 (anchovy canning); **79**: 43 (pressure cooling in cannery retort), 44 (infra-red heat processing); **83**: 40 (anchovy gibbing machine); **85**: 86 (fishmeal scorch-point testing machine); **86**: 3 (mechanical brining of B.C. salt herring), 16 (canning salmon cakes); **91**: 10 (vacuum pretreatment in fish canning); **94**: 3 (brine freezing fish); **99**: 27 (plastic net float buoyancy tests); **98**: 23 (holding shrimp in chilled seawater); **100**: 3 (holding trolled salmon in refrigerated seawater); **104**: 3, **108**: 10, **112**: 3 (refrigerated seawater installations); **114**: 7 (water-lift pump for unloading fish)

CVI 27 (seine boat tuna-freezing equipment); **28, 29** (pumping for unloading fish)

S 510A (transport & storage in chilled seawater); **595** (fish chilling)

SS 1355 (vacuum fish-unloading pumps)

Patent—Canadian No. 523,189 (fish-cleaning machine)

Hart, Edward G.

SS 545 (marine plankton collector device)

Hart, John Lawson

C 6: 165, 427, 445 (Ont. whitefish life history, growth, feed, parasites); **7**: 245 (B.C. pilchard feed)

J 3: 417 (capelin vertebral number sexual dimorphism); **4**: 478 (seasonal variations in B.C. herring proximate analyses); **6**: 164 (B.C. pilchard tagging); **15**: 833 (tagged lingcod anecdote by), 1127 (St. Andrews Biological Station history & activities); **17**: 127 (Passamaquoddy Fisheries Board Investigation)

B 36 (B.C. pilchard fishery); **38** (B.C. pilchard catch statistics); **39** (pollution from B.C. pilchard reduction plants); **64** (B.C. smelts); **155** Foreword (fishes of Atl. coast of Canada)

PRP 11: 24 (pilchard feed); **16**: 14 (pollution from pilchard reduction effluent); **24**: 15 (pilchard lengths & vertebrae counts); **31**: 7, **35**: 9, **38**: 18 (pilchard tag returns); **31**: 11 (B.C. herring tagging & tag detector), 19 (herring tagging mortality); **35**: 3, **39**: 5, **45**: 14 (herring tag returns); **37**: 19 (herring proximate composition); **38**: 16 (pilchard tag recovery apparatus); **41**: 20 (young herring vertebral number); **42**: 20 (lingcod tagging); **44**: 14, **56**: 10 (lingcod growth); **50**: 3 (Queen Charlotte Sound herring population); **51**: 16 (dogfish reproduction); **52**: 9 (albacore feed), 16 (sand fleas attack live bait); **56**: 6 3-year eulachon catch statistics), 16 (skipjack & king-of-the-salmon B.C. records); **57**: 3 (lingcod migration), 12 (fish size in pilchard runs); **59**: 10 (Skidegate Inlet, B.C., flatfishes); **62**: 10 (B.C. flatfishes nomenclature), 24 (log-book for otter-trawl catch statistics); **64**: 51 (pilchard tagging summary); **66**: 16 (dogfish size re value); **79**: 35 (feed of cod family); **71**: 3 (B.C. albacore fishery)

CNG 2 (Dover sole utilization); **4** (B.C. flatfishes nomenclature); **11, 22** (B.C. pilchard situation, 1948, 1950); **12**: 1, 3, 5, **17**: 1, 19 (B.C. albacore investigations); **26**: i, **27**: 1 (Forewords to B.C. herring investigation reports)

CSG 41 (Board oyster publications list, 1947–62)

S 120, 183 (pilchard vertebrae count statistics); **128** (pilchard investigation statistical methods); **160** (fur seal stomach contents); **161** (fish-length measuring board);

171, 193, 221, 240, 247, 254 (B.C. herring tagging methods, apparatus, insertions, recoveries); **176, 196, 220, 239, 246, 253, 261** (B.C. pilchard tagging, methods, insertions, recoveries); **194** (pilchard life history); **264** (unusual abundance of young pilchards); **302** (increased abundance of pompano off B.C.); **315** (B.C. fishery problems); **389** (B.C. trawl fishery); **527** (quota fisheries control sociological effects)

SS 376 (SE Vancouver Is. decapods); **403** (coregonine fishes daily movements); **429** (whitefish population of an Ont. lake); **430** (pilchard feed); **440** (new Pac. coast fish records); **457** (blue perch); **458** (young whitefish); **486** (B.C. black crappies); **487** (pilchard catch statistics); **488** (pilchard life history); **489** (Vancouver Is. melanistic garter snake); **490** (herring spawning quantitative studies); **546** (pilchards & herring); **646** (tag recovery devices); **667** (pilchard sex ratios); **775, 798** (pilchard tagging & recoveries); **776** (Hecate Strait otter-trawling); **852** (butter sole age & growth); **884, 1155** (B.C. fishery resources); **940** (fishing methods technological advances); **941** (Pac. herring investigations); **1231** (Passamaquoddy fisheries investigations, 1957–58)

Hart, John Sanford

J 7: 169 (goldfish cruising speed vs. temperature)

Hart, Josephine Frances Lavina

C 6: 23 (Vancouver Is. Cumacea)

J 19: 401 (B.C. king crab records)

S 133 (B.C. larval Brachyura development); **169** (B.C. Anomura development)

SS 547, 617 (Brachyura & Anomura culture methods); **678** (W arctic Cumacea & Decapoda); **708** (B.C. reptant decapod Crustacea)

Hartman, Gordon Fredrick

J 16: 695 (B.C. rainbow trout homing); **19:** 173 (rainbow trout spawning runs); **20:** 769 (juvenile brown trout behaviour)

Hartman, Wilbur Lee

J 21: 485 (sockeye salmon homing)

Harvestfish (*see* Butterfish)

Harvesting (*see* Fishing, methods of; *also* names of organisms)

Harvey, J. M.

C 5: 83 (*Calanus* heart rate re light)

Hasler, Arthur Davis

J 11: 107 (odour perception & orientation in fish), 472 (odour role in migrating coho salmon); **21:** 291 (*Daphnia* movements re light intensity)

Hatcheries (for invertebrates) (*see* Culture, invertebrates; *also* Crab; Lobster; Oyster)

Hatcheries, fish (and hatchery practices) (*see also* Culture, fish; Furunculosis; Pond culture; Transplantation)

C 1917–18: 105, **5:** 3, 40, 57 (sockeye salmon); **1917–18:** 149 (Atl. salmon); **6:** 207 (whitefish)

J 2: 311, **4:** 151, **6:** 483, **7:** 88, **15:** 785 (sockeye); **4:** 141, 233 (pink salmon); **6:** 311 (Atl. salmon); **8:** 125 (salmonids), 383, **10:** 196 (speckled trout); **13:** 547, **20:** 597 (Lake Ontario whitefish); **15:** 27 (efficiency of trout; correction on **16:** 386); **18:** 125 (trout rations); **19:** 127 (trout tissue glycogen), 365 (re rainbow trout diet, glycogen in tissues, fatigue)

B 50, 53 (sockeye); **84:** 27 (Atl. salmon, Kamloops trout, lake trout, speckled char)

PRA 1: 5 (at St. Andrews Biological Station, N.B.)

PRP 10: 10, **14:** 5, **16:** 10 (sockeye: techniques); **15:** 15, **18:** 14, **19:** 6 (plantings of brown trout eggs & fingerlings); **26:** 3 (efficiency of white vs. black ponds for trout)

S 84, 127 (sockeye); **141** (salmonid game fish); **259** (Atl. salmon); **507, 508, 509, 614** (best procedural use for Atl. salmon)

SS 3 (Canadian fish culture); **174, 630** (hatching Pac. salmon eggs in gravel); **369, 401, 583, 590, 613** (vs. natural propagation of sockeye); **427** (artificial rations for sockeye); **492** (control problems); **498** (algae causing mortality); **654** (Cobequid, N.S.); **695** (closed water system for); **727** (salmon egg mortality)

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Hatchetfish (an Atlantic) (*Polyipnus asteroides*)
B 155: 130 (recent occurrence)

Hatchetfish (a Pacific) (*Argyropelecus olfersi*) (*see also* Hatchetfish, silvery)
S 436 (distinction from *A. sladeni*)

Hatchetfish, Atlantic silver (*Argyropelecus aculeatus*)
B 155: 130 (full description)

Hatchetfish, silvery (*Argyropelecus sladeni*) (two-pronged hatchetfish)
J 11: 501 (in English Bay, B.C.), 502 (off Fraser R.); **19**: 307 (NE Pac. distribution)
B 68: 106 (description [mistakenly as *A. olfersi*]); **68R**: 133 (full description)
S 436 (B.C. occurrence & distinction from *A. olfersi*)

Hatchetfish, transparent (*Sternoptyx diaphana*)
B 155: 132 (full description)

Hatchetfish, two-pronged (*see* Hatchetfish, silvery)

Haut, Michael
J 21: 591 (*Astyanax* retinomotor cycles)

Hawkins, Winthrop Wesley
J 18: 85 (protein quality of protein concentrate, liver meal & visceral meal)

Hayes Brook, P.E.I.
S 419 (brook trout standing crop)

Hayes, Ernest Reginald
S 331 (aliphatic acid partition chromatography)

Hayes, Frederick Ronald
C 3: 133, **4**: 413 (*Littorina* behaviour & intertidal life)
J 12: 618 (improving N.S. lake conditions for trout population); **14**: 1 (lake conditions effect on bottom fauna & fish yield)
B 99 (factors affecting salmon ascending N.S. river)
S 116 (factors affecting sea-urchin early development)
SS 304 (periwinkle negative geotropism); **305** (environment re *Littorina* development & growth)

Hazen, Lake (**Ellesmere Island, Canadian Arctic**)
S 649 (biennial copepod, *Cyclops scutifer*)
SS 1201 (arctic char resource)

Head lengths (*see* Cranium; Morphology; Size; *also* names of organisms)

Headlight fish (*Aethoprora metopoclampa*)
B 155: 141 (full description)

Heads, products from (*see also* Spermaceti)
B 59, 89 (oils; *see* their indexes)
PRP 3: 5, **7**: 6, **9**: 23 (glue from halibut, etc.); **14**: 14 (lubricant oil from porpoise skull & jaw; analysis); **44**: 4 (oil from halibut); **73**: 58 (equipment for flesh recovery from); **75**: 48 (proximate anlayses of freshwater fish)
CVI 9, 12, 13 (proportion of body; proximate analyses; from freshwater fishes)

Headspace (in canned products) (*see also* Canning; Vacuum)
PRP 32: 4, **52**: 19 (re vacuum); **52**: 7 (re pressure cooling of cans)

Healing (*see* Injury, recovery from)

Hearing in animals (*see* Sound, reaction to)

Heart (*see also* Blood; Physiology, circulatory system)
J 16: 421 (sockeye salmon: nucleic acids); **17**: 347 (sockeye: histidine); **20**: 679 (tissue explant culture); **21**: 653 (sockeye: fatty acid oxidation by tissue)
S 430 (sockeye: parasitic copepod on); **607** (lingcod: phosphorylribose enzyme); **866** (trout: muscle glycolytic enzyme)

Heat, budget and exchange in waters (*see also* Oceanography)
J 14: 290, 459 (Strait of Georgia; corrections on **14**: 997), 487, 605 (waters of B.C. inlets); **15**: 432 (re heat & light radiation. Dixon Entrance, B.C.; correction on **17**: 943); **18**: 617 (Lake Ontario)
B 134 (Canadian Atl. waters)
PRP 108: 18 (between sea & atmosphere)
CPO 1963-2, 1964-6 (airborne radiation thermometry for sea surface temperatures)
S 217 (freshwater)

Heat, latent and specific
C 6: 386 (of fish muscle)
PRP 35: 18 (of different forms of ice)
S 101 (of fish muscle)

Heat, resistance to (*see* Lethal limits; Temperature, reactions to)

Hebron Fiord, Labrador
J 13: 709 (oceanography)

Hecate Strait (and region), B.C. (*see also* Oceanography, Pacific (NE coastal waters))
J 13: 647 (lemon sole survival factors); **14**: 165 (copepods distribution), 945 (wind effects on inshore water masses); **15**: 775, **20**: 1197 (hydrographic scale model location; tide calibration); **19**: 497, **21**: 1051 (Pac. cod fecundity; growth & maturity)
PRP 63: 35, **85**: 75, **86**: 13, **87**: 27 (lemon sole age, growth, fishery); **77**: 91 (dogfish & soupfin shark fishery); **89**: 84, **109**: 16 (crab tagging); **95**: 35 (dogfish feed); **100**: 18, **101**: 20, **103**: 23, **108**: 18, **110**: 3 (oceanography); **111**: 20 (trawl landings for mink feed)
CNG 62 (Pac. cod tagging)
CPO 1960-17, 1961-22, -23, 1962-1 (hydrographic model)
S 684, 857 (hydrographic model)
SS 776 (groundfish otter trawling)

Hectanooga Lake, N.S.
PRA 17: 8 (poisoning undesirable fishes)

Hedgpeth, Joel Walker
J 20: 1315 (arctic Pycnogonida)

Hedophyllum (*see* Kelps)

Height of water in rivers (*see* Flow)

Helicolenus dactylopterus (*see* Rosefish, blackbelly)

Heliozoa (*see also* Protozoa)
C 2: 507 (B.C.)
PF 1c (descriptions of B.C.)
S 11 (new, Vancouver Is.); **28** (new or rare, B.C.); **76**: 12, 17 (B.C.)
SS 315 (B.C.)

Hell's Gate (*see* Fraser River; Obstructions)

Helminths (*see also* headings listed under Worms)
J 13: 489 (parasitic to B.C. Pinnipedia)
S 706 (staining technique)
SS 469 (of Canadian animals)

Hemilepidotus hemilepidotus (*see* Irish lord, red)

Hemilepidotus spinosus (*see* Irish lord, brown)

Heming Lake, Man.
J 11: 1 (trout-perch); **15**: 203 (fishes & limnological studies); **17**: (mutant pike); **20**: 279 (whitefish feed), 417 (burbot taxonomy & biology), 1089 (measurement of *Triaenophorus* immature stages), 1431 (use of coloured tags in population estimates); **21**: 549 (*Ligula intestinalis* incidence in fishes)
B 95: 27 (pike control)
PRC 1: 31, **2**: 48, 51 (*Triaenophorus* control; biology)
CCG 3: 17 (population studies)
S 783 (trammel net trials)

Hemitripterus americanus (*see* Sea Raven, Atlantic)

Hemitripterus bolini (*see* Sculpin, bigmouth)

Hemoglobin (*see also* Blood)
J 12: 917, **17**: 647 (in salmonid blood after exercise)
S 806 (multiple, in Salmonidae); **884** (patterns in young Pac. salmons)
SS 1376 (multiple, in fishes)

Henderson, Eugene Blair
S 678 (disease-depleted oyster populations research)

Henderson, Jean T.
C 2: 307 (Atl. gribble distribution & life history); **3**: 235 (pike-perch parasitic copepod & life history); **4**: 397 (Lamellibranchiata lethal temperatures); **6**: 215 (new parasitic copepod)

SS 306 (temperature re schizopod heart rhythm)

Henderson, Nancy Elizabeth
J 20: 859 (eastern brook trout reproductive cycle), 899 (atresia in trout maturing ovaries)

Henfish (*see* Lumpfish)

Hennessey, John Patrick
PRA 62: 3 (salt fish moisture determination)

Hepburn, R. L.
SS 1128 (carp water temperature selection)

Heredity
J 4: 1 (Atl. salmon local behaviour); **6:** 245 (*Salmo gairdneri* migration); **7:** 88 (landlocked sockeye salmon); **9:** 169 (brook trout)
SS 831 (coho salmon smallness); **1263** (re Pac. salmons environment & morphology)

Herlinveaux, Richard Henry
J 11: 14, 799, **18:** 1027 (Juan de Fuca Strait tidal currents; oceanography); **19:** 1 (Saanich Inlet, B.C., oceanography)
PRP 95: 48 (predicting tidal currents); **108:** 7 (B.C. coastal tidal currents & water properties); **109:** 3 (oceanography re mass mortality of fish)
CPO 1959-1, -13, -18, -29 (B.C. coastal seaways oceanographic cruises); **1959-10, -17** (oceanography of B.C. coastal approaches); **1959-22** (B.C. daily coastal sea temperatures); **1960-9** (helicopter oceanographic observations); **1962-24** ("Polar Pack Operation" oceanographic assessment)
S 757 (submarine sound scattering)

Hermann, Frede
S 395 (ICNAF area waters)

Hermaphrodism (*see* Oyster)

Herring, Atlantic (biology) (*Clupea harengus harengus*) (sea herring; *see also* Sardine (Atlantic))
C 1901: 59 (fishery re sardine industry); **1902–05:** 91 (trematode parasites), 95 (eggs & life history); **1914–15:** 81 (myxosporidian disease); **2:** 103 (temperature resistance)
J 1: 145 (digestion & digestive enzymes); **2:** 95, **10:** 1, **15:** 1329, **17:** 409 (Quoddy region investigations); **2:** 401 (fatness; digestion; feed); **4:** 349 (movements re light), 392, **5:** 365, **17:** 409 (feed & feeding); **11:** 255 (Belle Isle Strait), 607 (stock & recruitment); **13:** 449, **18:** 31 (Nfld.); **15:** 625 (distribution & landings re temperature), 1142 (investigations review), 1259 (fatness in Bay of Fundy), 1383, **21:** 57 (as cod feed); **15:** 1451 (larvae distribution; correction on **17:** 943); **16:** 339 (size selection by gill nets; correction on **16:** 390), 812 (off Miramichi R.); **17:** 133 (S N.B. fishery; correction on **17:** 944), 689 (swimming speed), 699 (seasonal & vertical distribution), 721 (temperature tolerance), 725 (survival at low salinity), 735 (Fundy region explorations), 815 (Charlotte Co. fishery), 933 (larvae abundance & size); **18:** 221 (movements); **19:** 635 (swimbladder), 981 (feeding & growth of young in captivity), 985 (growth re hatching re spawning season); **20:** 435 (stocks changes after an epizootic), 1067 (spawning & predators); **21:** 203 (spawning off SW N.S.)
B 7: 19 (Langerhans islets re insulin); **111** (results of Atlantic Herring Investigation Committee researches); **121** (NW Atl. fishery); **155:** 94 (full description; economics)
PRA 7: 3, **8:** 6, **72:** 27 (fishery); **8:** 4 (mackerel invade grounds); **11:** 14 (digestion time of); **34:** 17 (fatness); **53:** 5 (re sea temperature); **62:** 30 (mortality); **67:** 31 (larvae); **70:** 10 (movements)
PRP 66: 4 (a comparison with Pac. herring characteristics, habits, fishery, etc.)
CNG 64: 19 (productive capacity)
CSG 19 (identification, habits, etc.)
S 111 (myxosporidian parasites); **211** (international Passamaquoddy fishery investigations); **234** (P.E.I.)
SS 116 (natural history; age; morphology); **133, 134, 680** (fishery & resources); **153** (scale growth); **171** (tide effect on distribution); **180, 181** (age & growth, Gulf of St. Lawrence); **295** (pursued by squid); **310** (Passamaquoddy proposed power project effect); **493, 494, 1086** (factors affecting movements); **930** (drift netting); **1134** (exploring for, in Nfld. area)

Herring, Atlantic (products) (*see also* "Bloater"; Kipper; Meals; Oils and fats; fish; Oil; Sardine (Atlantic))

C 1906–10: 23 (as cod bait); **1**: 279 ("rustiness" in brined)

J 1: 179 (non-protein N constituents); **7**: 96 (thiaminase in muscle & viscera), 116 (corrosion estimation in canned); **12**: 85 (landings re price & cost of living); **13**: 791 (fat determination); **18**: 893 (proximate composition); **21**: 1489 (protein concentrate)

B 52 (curing & packing pickled); **59, 89** (oils; *see* their indexes); **109, 141** (longlining bait); **121**: 33 (utilization of catches)

PRA 3: 7 (meal for fertilization of waters), 13, **58**: 17 (as bait); **10**: 8, **13**: 7 (freezing & storage for bait); **18**: 3, **48**: 12, **61**: 12 (marinated); **20**: 3 (trimethylamine oxide reduction during spoilage); **39**: 14 (dryer for kipper snacks)

CFI 6 (smoking kippers & canning kipper snacks); **16, 26** (canning in tomato sauce); **20** (marinating); **26** (canning methods)

CGR 2 (curing & packing pickled); **11** (marinating)

CHO 26 (smoking kippers); **27** (canning methods); **34** (marinating); **37** (maggots in smoked); **38** (smoking bloaters)

CVG 24 (known nutritional properties of meals)

S 101 (muscle heat capacity); **688** (glycerol & methyl esters from oil)

SS 287 (proteolytic enzymes)

Herring, Atlantic round (*Etrumeus sadina*) (*E. teres*)

J 16: 15 (Bay of Fundy)

B 155: 97 (full description)

PRA 21: 5 (unusual occurrence in Canadian Atl.)

S 226 (Bay of Fundy)

Herring, blueback (*Alosa aestivalis*) (*Pomolobus aestivalis*; mulhaden)

J 16: 813 (Miramichi Bay, N.B.)

B 155: 87 (full description)

Herring, glut (*see* Alewife)

Herring, lake (*see* Cisco; Cisco, least)

Herring, Loretta (*see* Whitefish, "humpback"; Herring, river)

Herring, Pacific (biology) (*Clupea pallasii*) (*C. harengus pallasi*)

C 1921: 105 (life history)

J 1: 477 (feed, S B.C.); **3**: 108 (B.C. populations), 145 (length & age composition); **4**: 461, 478 (fatness condition determination); **5**: 11, 347, 474 (vertebral development, number, etc.); **7**: 403 (populations distinction by vertebral number); **9**: 42 (re Alberni Inlet oceanography); **11**: 587 (stock & recruitment); **12**: 571 (*Anisakis* infection), 649 (recruitment & mortality; correction on **14**: 997); **15**: 313 (fecundity), 790 (investigations), 909 (Barkley Sound juvenile populations); **16**: 283 (juveniles distribution), 309 (juvenile & adult populations), 679 (seasonal changes in fatness condition); **17**: 913 (tissue collagen seasonal changes); **19**: 735 (distribution & survival); **21**: 873 (host of *Caligus clemensi*), 1317 (spawning population size)

B 17 (waterfowl predation on spawning); **47** (past & present B.C. fishery); **63** (locating by echo sounding); **65**: 20 (as salmon feed); **67** (B.C. catch statistics); **68**: 79, **68R**: 99 (full description); **104, 123** (midwater trawl for); **119** (growth & survival)

PRP 12: 12 (local populations); **16**: 14 (pulpmill pollution of spawning area); **18**: 10, **43**: 6, **49**: 11, **67**: 32 (age & growth); **23**: 16, **27**: 8 (Prince Rupert Harbour run); **23**: 17, **50**: 14 ("red feed" in); **24**: 6 (net selectivity); **30**: 3 (Laredo Sound summer run); **31**: 11, 19, **35**: 3, **39**: 5, **45**: 14, **50**: 3, **59**: 3, **61**: 23, **64**: 62, **66**: 8, **67**: 31, **70**: 17, **78**: 20, **84**: 63, **93**: 29 (tagging); **36**: 5 (catch statistics collection); **37**: 3 (time of day for catch); **38**: 10 (tide & moon re catch); **39**: 21 (Klemtu region population & feed); **41**: 10 (Kwakshua run), 20 (juvenile vertebrae number); **42**: 3, **47**: 14, **53**: 3, **55**: 10 (as salmon feed); **42**: 12, **45**: 12 (N B.C. runs); **47**: 10 (Queen Charlotte Sound); **52**: 11 (mortality); **53**: 16 (high egg mortality); **55**: 4, **61**: 17 (echo sounding for).; **58**: 17,

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

109: 12 (Strait of Georgia); **64**: 62 (electronic tag detector); **66**: 4 (characteristics, habits, fishery, etc. comparison with Atl. herring); **72**: 36 (seals predation on); **73**: 65 (larvae distribution); **78**: 3 (scale age determination); **79**: 35 (cod predation on); **80**: 57, **87**: 32, **93**: 13, **97**: 21, **119**: 9 (spawning); **87**: 32 (spawning in tanks), 33 (unusually large specimen); **95**: 35 (predation by dogfish); **96**: 15 (reactions of inshore to temperature & salinity); **98**: 21, **102**: 19 (midwater trawl for); **111**: 9 (bird predation on spawn)

CNG 1, 5, 9 (catches); **6, 7, 8, 15, 19, 21, 24, 25, 29, 34, 38, 43, 45, 49, 53** (fishery prospects, 1945–46 to 1959–60); **9, 37, 42, 46, 50, 56, 60, 69, 70, 71, 72** (spawning extent, 1946–47 & 1955 to 1963); **10** (Baynes Sound); **16** (1949 Queen Charlotte Is. prospecting); **18** (mass mortality, 1949; "dopey" condition, 1942); **26** (salinity re school size by echo sounding); **27** (absence of 1952–53 fishery re research); **36, 48** (midwater trawl use); **40** (egg development); **44** (seaweed spawning substrates); **60** (propagation); **63** (biology; larval development); **64**: 45 (productive capacity)

S 13 (tissue pentoses); **41** (bacteriology); **81** (tissues creatine content); **82** (tissue arginase); **98**: 10 (feed relations); **146** (B.C. herring investigation economic results); **171, 193, 221, 240, 247, 254, 260, 285, 327, 343, 363, 397, 446, 464** (tagging & population studies); **190** (vertebral count variations); **364** (protection & legislation effects on fishery); **378, 390**: 415 (management research project); **389** (in trawl fishery); **411** (history of B.C. fishery development; management; stocks; research); **423, 464, 500** (status of major B.C. stocks); **453**: 22 (B.C. abundance; distribution; commercial exploitation); **484**: 87 (growth rate re exploitation); **535**: 4 (effect of B.C. quotas); **683** (management); **851** (history of B.C. fishery; present status; future prospects); **873** (stock-recruitment of B.C. populations)

SS 126 (spawning & embryology); **393** (B.C. fishery); **462** (B.C. populations); **490** (quantitative spawning studies); **511** (age & growth); **546** (re pilchard in B.C.); **646, 785, 805, 820** (tagging programs & recoveries); **864** (management); **865, 897, 923, 948** (W coast Vancouver Is. investigations); **940** (populations, spawning, etc.); **998** (salinity effect on embryo); **1005** (effect of 1953–54 "no fishing"); **1024** (sea mortality of young); **1049, 1338** (aerial spawning survey); **1051, 1052, 1141** (spawning surveys); **1205** (midwater trawl for); **1274, 1275, 1276** (fishery abstention)

Herring, Pacific (products) (*see also* Herring, salted; Meals; Oils and fats)

J 4: 478, **16**: 679 (proximate analyses re season & condition); **5**: 428 (vitamins in body, liver & intestinal oils); **6**: 109 (unsaturated fatty acids nutritional value), 303 (dehydrated); **7**: 35 (flesh protein biological value), 138, 522 (rancidity control), 513 (flesh protein amino acids); **9**: 393 (flesh lipoxidase); **10**: 64 (vitamin B_{12}); **12**: 85 (landings re price & cost of living); **16**: 561, 685 (stickwater & condensed solubles); **17**: 913 (tissue collagen content seasonal variations); **18**: 93, 113 (liquefaction for animal feed products), 865 (fatty alcohols from oil); **19**: 839 (air blowing of oil)

B 37: 140 (oil); **47**: 26 (various products); **59, 89** (oil & vitamins; *see* their indexes); **126**: 28, 29 (changes in refrigerated seawater)

PRP 4: 6, **35**: 7, **36**: 16, **37**: 19, **38**: 7, **44**: 4, **45**: 21, **55**: 16, **63**: 43, **66**: 4, **79**: 32, **93**: 3, **94**: 24 (oil from whole fish: production, processing, fatty acid composition, vitamins A & D content); **19**: 20, **37**: 19, **53**: 9, **57**: 11, **69**: 66 (flesh analyses & nutritive values); **33**: 8 (vitamins A & D of flesh oil & liver oil); **36**: 16, **63**: 43 (oil: expansion coefficient & bulk measurement); **37**: 19 (composition re condition of fish); **37**: 19, **66**: 4, **77**: 106, **85**: 33, 86, **87**: 42, **89**: 79, **90**: 10, 14, **92**: 10, **94**: 27, **99**: 12, **108**: 24 (analyses, feed values, etc. of meals); **52**: 3, 7, 19, 24, **53**: 9, **79**: 44, **91**: 10 (canning & canned); **52**: 3, **53**: 9, **57**: 11, **59**: 12, **65**: 73, **66**: 9 (smoking or kippering); **55**: 18 (pearl essence from scales); **56**: 7, **57**: 16 (dehydrated); **56**: 12, **103**: 5 (as bait); **58**: 20 (marinated); **62**: 7 (freshness criteria); **63**: 38 (pastes; correction on **65**: 66); **69**: 66 (enzymic hydrolysis of flesh & composition); **72**: 33 (delicatessen); **79**: 44 (ultraviolet light for pre-drying); **94**: 27, **103**: 18, **111**: 23, **113**: 3 (condensed solubles in poultry rations, & analyses; correction on **J 16**: 931); **101**: 6, 10, **111**: 23 (stickwater conversion to condensed solubles); **101**: 27, **103**: 18 (stickwater & condensed solubles vitamin B_{12}); **105**: 19 (Na & K content of flesh); **108**: 24 (meals in chick rations)

CNG 3 (commercial recovery of scales)

CVI 11 (essential amino acids of flesh, milt, roe, scales, meal & stickwater); **17** (vitamins & amino acids)

CVG 21 (condensed solubles viscosity re pumpability); **24, 25, 26** (meals nutritional properties); **32** (bulk handling of meals)

S 325 (vitamin B_{12} microbiological formation from stickwater); **335** (cobalamins separation & assay); **407, 408** (stickwater bacterial decomposition & prevention); **425, 641** (heat & storage effect on oil in meals); **434** (flesh Na & K content); **593** (chick hypercholesterolemic factor); **601** (overcoming gelling of solubles)

SS 316 (B.C. harvest); **341, 342** (meal); **755** (freezing & thawing effect on canned); **906** (review of technology); **959** (folic acid content)

Herring, river (*Leucichthys laurettae*)

S 728 (pilot plant for processing, in Canadian Arctic)

Herring, salted (*see also* Kippers)

B 47: 22 (dry salting)

PRA 3: 3 (as bait for groundfish); **18**: 3, **48**: 12, **61**: 12 (marinated)

PRP 13: 3, **17**: 8 (dry salting of round fish); **86**: 3, **92**: 3, 5 (mechanical brining of round fish; correction on **93**: 2)

SS 791 (dry salting); **906** (review of technology)

Herring, sea (*see* Herring, Atlantic)

Hersilia vancouverensis

SS 50 (Hammond Bay, Vancouver Is.)

Hess, Ernest

C 4: 27 (smoke bactericidal effect); **5**: 93 ("dry meat" in canned lobster); **7**: 147 (haddock muscle preservation at 30°F); **8**: 459, 489 (low-temperature effects on marine bacteria)

J 1: 95 (freezing effect on marine bacteria), 109 (temperature effect on *Bacillus Vulgatus*); **3**: 358 (lobster shell chitinovorus bacteria); **5**: 249 (salt fish pathogenic bacteria survival), 276, 287 (salt fish "dun" moulds & fungistats), 438 (red halophilic bacteria); **6**: 1, 10, 17 (combatting red halophilic bacteria on salt fish)

B 24 (brine-frozen mackerel canning)

PRA 5: 9 (canning tuna); **6**: 12 (halibut skin yellow discoloration); **9**: 3 (vacuum role in canning), 7 (canned products storage temperature); **10**: 6 (freezing effect on bacteria); **12**: 7 (scallop canning); **13**: 5 (grading lobster canneries); **14**: 8 (canning mackerel fillets); **18**: 3 (marinated herring preparation); **19**: 10 (chitinivorus bacteria on live lobsters), 11, **25**: 5 (canning chicken haddies; correction on **27**: 17); **21**: 4 (canning "wet pack" lobster); **23**: 8 (clam shrinkage during canning); **27**: 3 (avoiding "red" in salt fish); **28**: 17 ("dun" salt fish); **29**: 20 (course to cannery foremen); **30**: 10 (estimating fresh fish keeping quality); **31**: 8 ("Iceland pack" canned fish); **33**: 10 (warning re certain canning procedures); **48**: 3 [joins F.A.O.]

CFI 1 (enamelled cans); **2** (canned fish sampling); **3** (vacuum production in cans); **5** (removal of nematode parasites); **7** (shellfish shucking plants); **8** (home-made cannery equipment); **9** (canning cod livers); **10** (canning tuna); **11** (shucking scallops); **13** (sardine canning); **14** (canning mackerel fillets); **15** (canned fish cakes); **16** (tomato sauce for canning); **17** (clam shucking plants)

CHO 1 (announcement re institution of this circulars series); **2** (lobster biology); **3** (handling live lobsters); **4–24** inclusive, **32, 33** (all aspects of preparing lobsters for canning; canning procedures; storage & spoilage of product; cannery sanitation; inspection); **13** (lobster paste "tomalley"); **24** (crystals in canned lobster); **27** (canned herring & alewives); **28** (canned mackerel); **30** (canning chicken haddie); **31** (planning a fish cannery); **32** (canning shellfish); **34** (marinated herring)

S 222 (fish & meat preservation)

SS 338 (smoking preserves); **548** (lobster canning); **549** (Pictou, N.S., lobster carnival); **592** (lobster paste preparation); **647** (salt quality re fish preservation); **648** (red halophilic bacteria growth limits); **709** (improving cannery equipment & sanitation); **910** (bacterial spoilage control)

Hester, Frank Jay
J 21: 757 (guppy fecundity)

Heterochordaria (brown seaweeds)
B 127: Fig. 20 (*abietina* as B.C. resource)

Heteropoda
J 19: 271 (NE Pac. *Atlanta* distribution)
S 616 (*Atlanta* in NE Pac.)

Hewson, Leo Clare
J 12: 930 (Lake Winnipeg burbot life history); **16**: 107 (7 years of Lake Winnipeg whitefish fishery), 131 (6 winter seasons of Lake Winnipeg fisheries); **17**: 625 (Lake Winnipeg whitefish fishery history & economics)
S 319 (comparison of nylon & cotton gill nets)
SS 963 (comparison of nylon & cotton gill nets)

Hexagrammos decagrammus (*see* Greenling, kelp)

Hexagrammos stelleri (*see* Greenling, whitespotted)

Hexagrammos superciliosus (*see* Greenling, rock)

Hexanchus corinum, H. griseus (*see* Shark, sixgill)

Heyamoto, Hiromu
J 19: 1175 (young sablefish age)

Hibernation
PRA 37: 14 (oyster drill)
SS 746 (hibernated oysters coliform bacteria content)

Hickson, S. J.
SS 115, 144 (Acyclonaria & other Pac. corals)

Hildebrand, Henry Herman
J 9: 83 (Ungava Bay fishes)
SS 911 (Ungava Bay birds)

Hillemann, Howard Herbert
J 21: 373 (grayling olfactory apparatus)

Hiltz, Raymond St. Clair
PRA 57: 6 (glucosamine from lobster shells)

Himantolophus groenlandicus (*see* Footballfish, Atlantic)

Hines, James Alexander
J 19: 591 (fish muscle protein fractionation)
S 633 (cod myosin & actomyosin enzyme activity); **801** (myosin-B extracts sedimentation patterns)

Hinnites giganteus (*see* Scallop, rock)

Hiodon alosoides (*see* Goldeye)

Hiodon tergisus (*see* Mooneye)

Hippocampus erectus (*see* Seahorse, spotted)

Hippocampus hudsonius (*see* Seahorse)

Hippoglossoides elassodon (*see* Sole, flathead)

Hippoglossoides platessoides (*see* Plaice, American)

Hippoglossus hippoglossus (*see* Halibut, Atlantic)

Hippoglossus stenolepis (*see* Halibut, Pacific)

Hippolytidae (*see* Shrimps (Pacific))

Hirano, Toshiyuki
S 860 (subarctic Pac. oceanography review re salmon)

Hirudinea (*see* Leeches)

Histamine
SS 478 (effect on skate blood pressure)

Histidine (*see also* Acids, amino)
J 17: 347 (in maturing sockeye tissues)

Histiocottus bilobus (*see* Sculpin, crested)

Histology (The following list includes only some of the numerous publications containing results of histological examinations; many other references will be found under the names of organisms, their tissues and organs. *See also* Cytology; Morphology; Morphometry)

C 1918–20: 185 (lobster claw flexor tendon); **8:** 207 (skate arteries & conus)

J 1: 109 (*Bacillus vulgatus*); **11:** 63 (chum salmon testes); **12:** 61 (albacore gonads), 178 (young sockeye salmon pineal body); **13:** 175 (flesh of "jellied" vs. normal plaice); **21:** 373 (grayling olfactory apparatus)

S 18, 24 (Langerhans islets tissue); **829** (cyclic changes in oyster gonads)

SS 277 (dogfish colon); **715** (teleost scales)

History (*see also* Biological Board of Canada; Fisheries Research Board of Canada; Life history; Stations)

C 1906–10: 45 (Gaspé & Cape Breton fishing companies); **6:** 455, **8:** 13 (of Canada Department of Fisheries & Biological Board expeditions to Hudson Bay)

J 12: 453 (salmon fishing & canning, Skeena R., B.C.)

B 21 (Atl. salmon fishery); **34** (B.C. oysters fishery); **36** (B.C. pilchard fishery); **47** (B.C. herring fishery); **64** (B.C. smelt fishery); **90, 142** (B.C. salmons fishery); **91** (Queen Charlotte Is. crab fishery); **107** (Great Slave L. fishery); **121** (NW Atl. herring fishery); **134** (Atl. oceanography); **139** (Strait of Georgia trawl fishery); **155:** 4 (Canadian Atl. coast ichthyology)

PRP 48: 9 (halibut liver oil industry); **58:** 3 (dogfish & shark liver oil industry)

NRB 11 (Nfld. lobster fishery)

NSB 1 (Nfld. dried cod industry); **2** (Nfld. lobster fishery); **3** (Nfld. cod liver oil industry)

S 132 (B.C. oyster fishery); **258** (Canadian fisheries research); **292, 354** (E Canadian fisheries); **315** (B.C. fisheries problems); **329** (Ungava Bay); **344** (NE Atl. oceanography); **346** (Passamaquoddy Bay sardine fishery); **389** (B.C. trawl fishery); **392** (B.C. dogfish fishery); **393** (B.C. whaling); **394** (sablefish fishery); **851** (individual B.C. fisheries)

SS 284 (Maritimes fisheries development); **358** (Prairie Provinces fisheries); **432, 682** (Canadian fisheries research); **745** (B.C. marine zoology); **759** (Great Lakes Canadian fisheries); **804** (Nfld. fisheries research); **1028** (of biology); **1108** (B.C. fisheries resources); **1302** (development of fish populations abundance dynamics)

Histrio histrio; H. pictus (*see* Sargassumfish)

Hitz, Charles Robert

J 18: 279 (2 juvenile B.C. rockfishes); **21:** 851 (skate egg-cases)

Hjort, Johan

SS 116 (Atl. herring natural history); **178** (Introduction to 1914–15 Canadian Fisheries Expedition reports)

Ho, Francis Chung-Wai

J 18: 393 (coho plasma proteins), 859 (maturing sockeye serum constituents)

Hoar, William Stewart

J 4: 409 (Atl. salmon seawater resistance), 441 (Atl. salmon weight–length relations); **6:** 90 (salmon & trout diurnal feeding activities); **8:** 241 (Pac. salmons seaward migration); **10:** 523 (Pac. salmon fry current responses); **11:** 57 (chinook salmon pituitary growth hormone), 63 (chum salmon androgens), 69 (juvenile sockeye salmon behaviour); **12:** 178 (sockeye pineal organ); **13:** 309 (Pac. salmon fry migration behaviour); **14:** 815 (young Pac. salmon light reactions); **15:** 251 (juvenile salmon learning a constant course), 391 (juvenile salmon migratory behaviour evolution); **21:** 869 (an appreciation of W. A. Clemens)

B 90 (B.C. chum & pink salmon fisheries)

S 184 (Gulf of St. Lawrence butterfish); **223** (Atl. salmon thyroid gland)

SS 618 (Atl. salmon swimbladder development); **830, 909** (B.C. fisheries & resource-use problems); **942, 964** (hormones & effect on salmon fry); **963** (thyroid function in anadromous vs. landlocked teleosts); **991** (fish migrations control & timing); **922** (fisheries biology experimental & physiological approach); **998** (salinity effects on Pac. herring development)

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Hochachka, Peter William
J 16: 321 (hatchery rainbow trout fatigue resistance); **18**: 125, **19**: 127 (trout glycogen reserves); **20**: 845 (fish blood buffering capacity)

Hodder, Vincent Mackay
J 15: 355 (haddock drumming muscles); **20**: 1465 (Grand Bank haddock fecundity)
S 792 (net-mesh gauges comparison)
SS 1321 (ICNAF fishery assessment re regulations)

Hogenkamp, Henricus Petrus Cornelis
S 521 (marine bacteria nutrition & metabolism)
SS 1330, 1365 (nucleoside from coenzyme B_{12}); **1358** (coenzyme B_{12} preparation); **1366** (coenzyme B_{12} electron spin resonance)

Holconotus rhodoterus (*see* Seaperch, redtail)

Holds, fishing vessel (construction & care of fish in) (*see also* Bacteria; Disinfectants; Icing; Insulation; Odours; Sanitation; Sea water, refrigerated)
J 12: 329, **13**: 21, 207, 291, 861, **16**: 223, **18**: 295 (cod & haddock gutting, icing, sanitation, quality)
B 100 (sanitation, etc.); **103** (N. Atl. trawlers); **127** (for refrigerated seawater fish stowage)
PRA 21: 16 (insulation & drainage); **36**: 3, **46**: 6 (insulation re fish cooling rates); **55**: 27, **59**: 15, 18, 22, **60**: 7, **61**: 13 (pens for refrigerated holds)
PRP 87: 47, **88**: 57, **92**: 21 (for freezing at sea)
CVG 27 (for freezing albacore on seiners)
S 403 (suppressing pen surface odours)
SS 445 (formalin disinfectant spray); **360, 396, 473, 474, 525, 526, 527, 691, 997** (sanitation & chilling); **1082** (jacketed refrigerated); **1251** (engineering & architecture)

Holland, Gilbert Arthur
S 862 (pink salmon migration & exploitation re Fraser R. convention area)

Hollands, Mary
J 15: 587 (sockeye & coho cruising speed re temperature)

Hollett, Andrew
J 6: 152 (moulting lobster blood & muscle P), 183 (crystals in canned lobster); **17**: 116 (canned herring corrosion estimation)

Hollister, Henry John
J 15: 851 (NE Pac. drift-bottle releases)
PRP 71: 3 (B.C. albacore fishery); **78**: 14 (taking of water temperatures); **81**: 75, **86**: 6, **91**: 3, **94**: 8 (B.C. coastal daily seawater observations); **98**: 6 (B.C. coast 1952 sea temperatures); **111**: 22 (B.C. drift bottle recovered in Hawaii)
CPO 1958-3 (radio broadcasting of B.C. coastal oceanographic data); **1958-5, -9, -11, -12, 1959-2, -5, -7, -8, -12, -14, -16, -19, -25, -26, -28, -30, 1960-1, -6, -10, -12, -14, -18, -22, -25, -26, -28, -30, 1961-1, -3, -8, -20, -28, 1962-3, -12, -21, -23, 1963-1, -5, 1964-7, -11** (seawater temperatures along B.C. coast from lightstations, by months); **1960-19** (B.C. offshore surface sea temperatures outlook); **1964-10** (B.C. coastal sea salinities)
SS 1156 (B.C. coastal daily sea temperatures)

Holmes, William Neil
S 726 (Atl. hagfish blood corticosteroids)

Holocephali (*see* Chimera; Ratfish)

Holophryxus alaskensis (parasitic isopod)
J 21: 971 (re-description)

Holothuroidea (*see also* Sea-cucumbers)
C 1917–18: 235 (Canadian)

Homans, Ross Edans Spencer
J 11: 535 (haddock feeding re sexual cycle; correction on **14**: 997)
PRA 15: 10 (spawning haddock feeding); **24**: 12 (haddock landings); **48**: 12 (marinated herring)
CFI 4 (canning shad); **6** (canning kipper snacks); **16** (tomato sauce in canning); **18** (canning swordfish); **19** (canning lobsters); **20** (marinated herring); **21** (lobster paste); **23** (canning mussels); **24** (canning clams); **25** (canning oysters)
S 203 (rare N.S. marine fishes & salps); **272** (haddock feed)

Homarus americanus (*see* Lobster)

Homathko River, B.C.
J 14: 490 (dilution effect on Bute Inlet)

Home Lake, Man.
J 15: 203 (limnology)

Homing (The following are some specific references; *see also* Migration; Odour; Salmon, Atlantic (biology); Salmons, Pacific; *also* individual species of Pacific salmons)
J 11: 107, 210, 472, **19**: 327, **20**: 287, 1457 (re olfactory perception by Pac. salmons); **21**: 485, 1227 (Pac. salmons)
PRP 47: 19, **51**: 3 (coho salmon); **48**: 13, **57**: 8, **58**: 8 (pink salmon); **57**: 3, **107**: 19 (lingcod); **81**: 92 (sockeye salmon)
S 42, 444, 666, 846 (olfactory perception by Pac. salmons); **165, 168, 187, 192, 225, 333** (Atl. salmon)
SS 223, 400, 614, 615 (sockeye); **491, 602, 650, 912, 1027** (salmons)

Hood, E. G.
SS 249 (canned lobster blackening)

Hoogland, Pieter Levinus
J 11: 355 (vitamin B_{12} from cod-liver solids); **13**: 869 (cod & haddock viscera processing); **15**: 717, 747 (fish quality grading statistical analysis); **18**: 501 (cod tropomyosin amino acids); **19**: 1095 (cod tropomyosin enzymic digestion); **20**: 1 (*Phocanema* chemical analysis), 729 (bacteria amino acid composition re productivity)
PRA 54: 3 (cod liver residue animal protein factor); **55**: 11 (cod & haddock vitamins); **57**: 6 (glucosamine from lobster shell); **61**: 12 (white spots on marinated herring); **65**: 24 (acid ensilage from offal)
CHN 3 (trimethylamine determination); **4** (determination of fish salt content)
S 428 (cod liver oil B_{12} activity for *Lactobacillus*); **439** (cod & haddock B vitamins)
SS 993 (all-glass dispenser valve)

Hookear, arctic (*see* Sculpin, arctic hookear)

Hooknose Creek, B.C. (*see* Port John Lake, B.C.)

Hooks
S 555 (selection for cod); **850** (selection for cod, haddock, redfish)
SS 1144 (Norwegian jigger)

Hopeless Mtn., B.C.
SS 467 (Protozoa & Algae)

Hori, Aiko
S 533 (Na re marine bacteria metabolism); **608, 634** (marine bacteria nutrition & metabolism)

Hormones
C 7: 1, 17, 31 (in skate organs)
J 11: 57 (salmon pituitary growth factor), 63 (salmon androgens); **16**: 559 (salmon androgen; correction on **16**: 931)
PRP 71: 5 (from gonads); **112**: 6 (cortisol re spawning sockeye salmon deterioration)
S 564, 573, 604, 620, 626, 636, 664, 665, 668, 692 (in sockeye plasma); **653** (chemical reduction by yeast); **708** (in plasma of salmons, lingcod, sablefish); **726** (in Atl. hagfish blood); **770** (metabolism in sockeye); **776** (sockeye blood & testes testosterone); **856** (assaying in Atl. salmon plasma)
SS 942 (in fishes); **964** (effect on Pac. salmon fry); **1299** (estradiol-17 in lobster eggs); **1385** (effect on Atl. salmon maturity)

Horn, artificial
C 8: 531 (from fish muscle meal)
PRA 7: 14 (from fish meal); **9**: 8 (from fish muscle)

Horne, David Cecil
J 14: 637 (frozen lobster meat discoloration)
CHN 2 (lobster meat discoloration)
S 455 (frozen vs. unfrozen sardines for canning)

Hors d'oeuvres (*see* Delicatessen)

Horsefish (*see* Moonfish, Atlantic)

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Horsehead (*see* Lookdown, Atlantic)

Hotham Sound, B.C.
PRP 102: 20 (natural oyster propagation)

Hourston, Alan Stewart
J 8: 347 (maskinonge feed & growth); **15:** 909, **16:** 283, 309 (Barkley Sound, B.C., juvenile herring); **21:** 1245 (salmon population model)
PRP 96: 15 (B.C. inshore herring re environment); **97:** 21 (N B.C. spawning herring population); **109:** 3 (fish mass mortality oceanography), 12 (Strait of Georgia juvenile herring abundance)
CNG 26 (echo sounding for herring schools size)
S 327, 343 (Vancouver Is. herring investigation results); **464, 500** (B.C. herring stocks status); **862** (pink salmon migration & exploitation re Fraser R. convention area)
SS 948 (W. coast Vancouver Is. herring); **1024** (young herring mortality); **1076** (maskinonge geographical variations)

Hourston, William Roderick
B 101, 106 (rockslide effects on Babine R., B.C., salmon)
SS 965 (Moricetown Falls biological survey); **1157** (artificial spawning channel for salmon)

Houston, Arthur Hillier
J 18: 401 (chum salmon & steelhead trout salinity adaptation); **20:** 1355 (smolting Atl. salmon body fluid regulation); **21:** 1535 (salmonids osmoregulatory adaptation)

Howe Sound, B.C.
J 18: 907 (oceanography)
PRP 12: 7 (oceanography)
S 123 (oceanography)

Howell, John Hancock
SS 1277 (sea lamprey larvicide)

Hoy, Joe
J 16: 381 (portable conductivity bridge; correction on **16:** 930)

Hoyle, Richard James
J 21: 101 (frozen cod polyphosphate treatment), 747 (marine fatty acids origin), 1379 (plankton lipids fatty acids)
S 805 (marine lipids fatty acids distribution); **819** (marine animals depot fats structure); **864** (fatty-acid pattern retention after triglyceride ingestion)

Huard, V. A.
SS 1, 4, 14 (early Atlantic Biological Station work); **10** (lampreys)

Hubbs, Carl Leavitt
C 7: 319 (new B.C. blenny & other B.C. records)
J 6: 30 (pigmy poacher peculiar variants); **21:** 1129 (Greenland halibut distribution)

Hucho hucho **and** ***Hucho perryi*** (salmonoid fishes)
J 18: 679 (osteology; phylogeny)

Hudson Bay (including James Bay) (References numbered I–V are results from a 1920 Expedition; those numbered 1–12 are results from a 1930 Expedition) (*see also* Oceanography, subarctic; Hudson Strait; Ungava Bay)
C 1921: 133 (I. Foraminifera), 149 (II. sticklebacks); **1:** 21 (III. echinoderms), 27 (IV. Ascidiacea), 419 (fishes); **3:** 1 (V. amphipods); **6:** 455 (1. fisheries), 463 (2A. fishes at Churchill), 472 (2B. survey), 475 (3. hydroids), 483 (4. copepods), 495 (5. diatoms); **7:** 91 (6. oceanography), 361 (7. Bryozoa); **8:** 1 (8. coregonine fishes), 13 (9. non-coregonine fishes), 63 (10. marine algae)
J 3: 350 (11. echinoderms); **5:** 23 (Pteropoda); **6:** 129 (12. [erroneously numbered 11] Polychaeta); **9:** 1 (arctic char), 10 (distribution of fishes); **13:** 41, **16:** 403 (station lists of "Calanus" Expeditions for biology & oceanography)
B 98 (beluga)
CAG 6 (netting sea mammals)
S 15, 545 (mussels & growth rate); **62** (fishes)
SS 111, 117, 119 (fishes, whales & birds survey); **375** (dearth of fish); **463, 748** (fishery possibilities); **513** (Pac. fishes in); **1025** (life production); **1393** (fish collections); **1411** (James Bay freshwater amphipods)

Hudson Strait (*see also* Oceanography, subarctic; Hudson Bay; Ungava Bay)
J 12: 762 (barnacles), 899 (echinoderms); **13:** 41 ("Calanus" Expedition station list); **15:** 219 (bearded seals)

S 545 (*Mytilus edulis*); **762** (*Sagitta* re primary production)

Hughes, Mary Louise

J 19: 605, 1081 (cod oil free fatty acids & esterification); **20:** 89 (air-blowing cod liver oil), 591 (capelin oil fatty acids), 743 (cod-worm in-vitro maturation); **21:** 347 (wound healing in cod)

Hull, John Herbert

PRA 73: 11 (Canadian Atl. sea temperatures)

Humber Arm, Nfld.

J 12: 684 (pulpmill pollution survey; correction on **14:** 997)

Humes, Arthur Grover

J 11: 816 (Atl. mussel new parasitic copepod)

Humidity of air (*see also* Drying)

J 6: 10 (effect on halophilic bacteria growth), 303 (re dehydrated fish flesh); **12:** 71 (relative, in cod drying)

PRA 20: 8, 10, **24:** 17 (significance in drying for salting fish); **38:** 6, **56:** 23 (re artificial drying); **53:** 8 (re equilibrium moisture curves for salt cod)

PRP 57: 16 (relative, re storing dehydrated fish)

Humpback salmon (*see* Salmon, pink)

Hunter, Andrew

S 23 (urea & arginase colorimetry); **25, 82** (arginase distribution in fish, etc.); **81** (tissue creatine content)

Hunter, John Gerald

J 16: 403 ("Calanus" Expedition station list; correction on **16:** 930), 835 (pink & chum salmon stream production; correction on **17:** 943)

PRP 77: 105, **79:** 33 (natural Pac. salmon propagation); **81:** 91 (hybrid salmon in B.C. fishery); **88:** 70 (pink salmon reproduction efficiency); **96:** 22 (Queen Charlotte Is. pink salmon cycle)

S 383 (special weir for fry & adult salmon)

SS 1025 (Port John pink & chum salmon)

Hunter, John Roe

J 21: 613 (carp, etc. net-avoidance behaviour)

Hunting methods

B 98: 14 (beluga)

CAG 1: 74 (E Arctic seals); **8** (beluga in Arctic)

Huntsman, Archibald Gowanloch

C 1906–10: 103 (B.C. holosomatus ascidians); **1911–14(I):** 39 (new Caprellid species); **1911–14(II):** 145 (Ont. freshwater Malacostraca); **1917–18:** 169 (Miramichi, N.B., salmon disease); **1918–20:** 86 (Atl. Tomopteridae annelid plankton), 93 (Atl. floating tunicates); **1921:** 49 (Bay of Fundy fishes), 167 (Biological Board publications, 1901–21); **1:** 27 (Hudson Bay Ascidiacea), 125 (Quill Lakes, Sask., fishing possibilities); **2:** 69 (Halifax Harbour seawater pollution), 81 (marine animals lethal sunlight limits), 89 (lobster larvae temperature extremes resistance), 95 (marine animals high temperature resistance); **3:** 423 (haddock fishery fluctuations); **6:** 455 (Hudson Bay fisheries determination)

J 2: 401 (Passamaquoddy herring feed, digestion, fatness); **4:** 1 (Atl. salmon heritable local behaviour), 96 (Atl. salmon kelts sea movements), 409 (Atl. salmon seawater resistance); **5:** 227 (cyclic abundance of birds vs. salmon), 485 (salmon & trout lethal high temperatures); **6:** 311 (variable salmon seaward migration), 399 (salmon parr migration); 476 (stream fishes heat stroke); **7:** 248 (stream fertility & fertilization), 363 (*Odontosyllis* lunar periodicity); **10:** 1 (movements & decline of large Quoddy region herring); **11:** 198 (Belle Isle Strait oceanography); **15:** 1213 (Shubenacadie, N.S., salmon)

B 1 (Canadian plaice); **5** (natural lobster breeding); **9** (dried salt fish processing); **13** (Canadian Maritimes arctic ice); **20** (frozen fish & fillet processing); **21** (Canadian Atl. salmon); **51** (Atl. salmon return from the sea); **57** (Margaree, N.S., salmon for angling)

PRA 1: 5 (preserving scallops), 6 (canning brine-frozen mackerel), 12 (metal ions

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toxic to fish), 13 (fillet skinner), 15 (fish hatching investigations); **2**: 4 (ice & salt brine freezer), 14 (temperature re Passamaquoddy fishery), 16, 18 (salmon catch size periodic changes); **3**: 13 (bait preservation); **5**: 11 (eel-grass disease); **6**: 7 (record early Nfld. salmon run); **7**: 3 (herring seasons re temperature); **8**: 4 (mackerel invade herring nursery), 6 (sardine fishing effect on salmon angling)

MSP 2 (shellfish bait for cod)

S 5 (Atlantic Biological Station faunal notes); **6** (*Sagitta* reproduction success); **20** (Atl. estuarial hydrography); **21** (oceanic tidal & other oscillations); **32** (diatom maxima causes); **40** (marine animal comparative thanatology); **140** (sucker re salmon & trout); **165, 168, 187, 225, 333** (Atl. salmon races; migration; spawning urge; homing instinct); **175** (cause of periodic salmon scarcity); **188** (N American Atl. salmon); **192** (salmon sea behaviour); **205** (past & future fish culture); **207** (captured fish overexertion mortality); **211** (International Passamaquoddy Fishery Investigation); **256** (tagged salmon distant recapture); **258** (Canadian fisheries research); **259** (salmon planting origin, aims & results); **266** (fishery depletion); **267** (prospects for more fish); **269** (assuring salmon for angling); **270** (Ont. salmon disappearance); **275** (salmon, etc. research importance); **276** (salmon angling vs. netting); **280** (lake salmon hereditary distinctness); **289** (biacropsis method in ecology); **291** (salmon & animal migration); **292** (fishing & assessing populations); **298** (freshets & fish); **300** (NE Canada fishery problems); **303** (scientific research vs. probability theory); **306**: 153 (Canada's known & unknown oceans); **346** (how Passamaquoddy produces sardines); **354** (Canada's Atl. fisheries situation)

SS 43, 64, 65, 66, 216, 230, 233, 250 (classification, development, age, growth, etc. of ascidians); **145** (some Ont. crayfishes); **146** (E Canadian lampreys); **153, 169, 172, 181** (growth of fishes & age from scales); **170, 171** (tide effect on intertidal animals distribution); **155** (Canadian Atl. flatfishes); **154, 181** (Gulf of St. Lawrence fisheries research); **185** (Atl. plankton qualitative & quantitative studies); **196** (Canadian Atl. waters climate); **215** (light effect on mussel growth); **231** (winter mackerel fishery possibility); **232** (St. Andrews, N.B. Biological Station); **251, 252, 253, 254, 268, 750, 760, 913** (Canadian fisheries research); **265** (CO_2 as fish refrigerant); **266** (mackerel migrations); **267, 282, 307** (oceanography); **283** (Halifax Technological Station work); **284** (Maritimes fisheries development); **292** (reason for fish flesh tenderness); **308** (science re fisheries); **309, 339, 710** (fresh & frozen fish); **310, 886** (Passamaquoddy power project re fisheries); **377** (attacking the fishery problem); **431** (biology re oceanography); **432, 682** (progress reviews of Canadian fisheries research); **491, 650, 912, 1027** (Atl. salmon homing factors); **492** (aquiculture control problem); **493, 494** (herring re water movements); **550** (lake ball formation); **551** (trout fingerlings killed by barbed seeds); **552, 711** (fish as food); **553** (refrigeration in nature); **649** (the problem of life); **651, 681** (Atl. salmon year-class relative strength); **679** (N American fish policy); **680** (Quoddy region winter herring); **683, 853** (Atl. salmon migration & conservation); **684** (obituary of J. P. McMurrich); **712** (Pac. salmon not established in Atl.); **747, 748, 749, 943** (wise use of fisheries resources); **761** (obituary of Arthur Willey); **799** (1918 Miramichi Fisheries Investigation); **800** (obituary of E. E. Prince); **854** (man's effect on Ont. streams & fish); **887** (superstition in fisheries biology); **888** (fishing industry possibilities); **944** (mathematics re science); **966** (Bay of Fundy life production); **967** (cause of 9- or 10-year salmon cycle); **968** (population vs. resources); **994** (fishery management & research); **955** (currents re capture of marine fishes); **1026** (Hudson Bay productivity); **1028** (what biology ?); **1215** (Man and the Universe); **1331** (ectology method in ecology)

Huntsman, Mary Elinor

C 7: 31 (hormone action on skate heart)

Hurn, David

J 21: 1069 (Nitinat L., B.C., characteristics)

Huro salmoides (*see* Bass, largemouth)

Huron, Lake (*see also* Georgian Bay: Great Lakes)
J 9: 325 (temperature distribution); **12:** 147 (bass fishery, South Bay; correction on **12:** 942); **17:** 517 (*Mysis* migration); **20:** 735 (alewife), 1089 (immature *Triaenophorus* measurements)
PRC 1: 3 (sea lamprey incidence & effect), 22, **2:** 21, 32 (sea lamprey control)

Hurricane (*see* Storms)

Hutchinson, Andrew Henderson
J 6: 206 (obituary of Arthur Willey)
PRP 4: 3 (economic effects of Fraser R. on Strait of Georgia)
S 56, 75 (Fraser R. estuary plankton distribution); **112** (Strait of Georgia oceanography re phytoplankton)
SS 340, 378, 379 (Strait of Georgia oceanography re phytoplankton); **593, 713** (polygonal presentation of polyphase ecological data)

Hutchinson, Samuel Jerome
S 237 (pink salmon upstream migration)

Hybognathus hankinsoni (*see* Minnow, brassy)

Hybognathus nuchalis (*see* Minnow, silvery)

Hybopsis biguttata (*see* Chub, hornyhead)

Hybopsis dissimilis (*see* Chub, streamline)

Hybopsis gracilis (*see* Chub, flathead)

Hybopsis micropogon (*see* Chub, river)

Hybopsis plumbea (*see* Chub, lake)

Hybopsis storeriana (*see* Chub, silver)

Hyborhynchus species (*see* Minnow, bluntnose; Minnow, fathead)

Hybridization
J 15: 607 (preferred temperature of brook trout × lake trout); **17:** 541 (brook × lake trout life history); **21:** 1043 (thermal resistance of pike × maskinonge)
B 32: 35 (*Salmo gairdnerii* × *S. clarkii clarkii*)
PRP 6: 6 (between various Pac. salmons); **81:** 91 (pink × chum salmon)
S 409: 30 (fertility of crossed *Oncorhynchus* species)
SS 163 (*Asterias* × *Solaster*); **538** (Pac. salmons); **673** (cod × haddock); **1208:** 70 (cutthroat trout × rainbow trout = Cranbrook trout), 107 (of redside shiner)

Hydraulic harvester (for shellfish) (*see* Dredge)

Hydrocarbons (*see also* Carotenoids)
J 14: 54, 57 (& carotenoids in sewage, freshwater & marine seston & sediments, & natural waters)
B 59, 89 (in marine animal oils; *see* their indexes)
S 833 (gas–liquid chromatography of monoalkenes)

Hydrodynamics (*see also* Flow; Limnology; Oceanography; Waves; *also* other cognate subjects)
C 7: 91 (Hudson Bay region)
CPO 1961-23 (wave suppression in Hecate Strait model)
S 684 (re Hecate Strait model); **857** (stilling well)
SS 183 (Canadian Atl.); **485** (derivation of Bjerknes' concept)

Hydrogen bonding
SS 1185, 1213 (chemical significance)

Hydrogen ion concentration (*see* pH)

Hydrogen sulphide
J 13: 863, **14:** 618 (production during fish spoilage); **14:** 771 (effect of antibiotics on production); **18:** 975, **19:** 1 (in deep water of some B.C. fiord inlets)
PRP 12: 7 (in deep basin of 3 inlets); **109:** 3 (from decomposing wood bark causing fish mortality)
S 123 (in deep basin of 3 inlets)

Hydrogenation (principal references to applications to marine animal oils)
C 7: 521 (pilchard oil)
B 37: 31, **59, 89** (various oils; *see* their indexes)
PRP 9: 15 (of fish oils for food); **10:** 4, **11:** 5, **19:** 7, **20:** 6, **21:** 18, **25:** 13, **28:**

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6 (pilchard oil for various uses); **79**: 32 (herring oil for margarine)
S 330 (precision semi-micro apparatus); **429** (Pt as selective catalyst for); **449, 458, 463** (kinetics of, for methyl esters); **845** (of methyl esters in ethanol)

Hydrography (*see* International Commission for the Northwest Atlantic Fisheries; Limnology; Oceanography; Physiography; *also* names of bodies of water and other cognate subjects)

Hydroids (*see also* Hydromedusae; Hydrozoa)
C 1917–18: 329 (descriptions of Canadian); **1918–20**: 137 (key to Canadian Atl.); **1**: 95 (Canadian Pac.); **3**: 323 (Gulf of St. Lawrence); **6**: 475 (Hudson Bay & Strait)
J 1: 503 (Queen Charlotte Is.)
AF 3a (descriptions of Canadian Atl.)
S 79: 6 (ultraviolet light effect on *Tubullaria*); **147** (Queen Charlotte Is.); **623** (arctic)
SS 42, 61, 90, 165, 541, 675 (N America W coast); **48** (*Endocrypta huntsmani* name change); **62, 113, 262, 291, 774** (Canadian E coast); **227, 675** (Canadian Arctic); **455** (as potential feed supply)

Hydrolagus affinis (*see* Chimaera, deepwater)

Hydrolagus colliei (*see* Ratfish)

Hydrology (*see* Flow; Limnology; Oceanography)

Hydrolysates (*see also* Ensilage; Solubles, condensed)
J 7: 513, 563 (enzymic, from fish flesh & liver residues); **18**: 93, 113 ("solubilized herring" for animal feed)
PRA 65: 24 (from cod & haddock offal); **73**: 9 (from fish skin)
PRP 93: 20, **96**: 16 (from halibut as ruminant feed supplement)

Hydrolysis of oil (*see also* Oils and fats)
C 7: 505 (in fresh & frozen salmon)
J 16: 43, **18**: 143, **19**: 169, **21**: 101, 539 (in fresh or frozen muscle or fillets)
B 37: 25, **59, 89** (*see* their indexes)
PRP 3: 3, **15**: 5 (in cold-stored fish); **18**: 5 (during canning)

Hydromedusae (*see also* Hydroids; Hydrozoa; Jellyfish)
C 1: 219 (descriptions of Canadian Pac.)
S 587 (of Minas Basin, N.S.)

Hydrometer
PRP 84: 51 (use technique for brines & dips)

Hydroxylamine
J 6: 349, **10**: 69 (bacteriostat in fish spoilage); **7**: 461, **13**: 201 (from bacterial reduction of nitrate, & production of nitrite from); **14**: 64 (in decomposing algae)

Hydrozoa (*see also* Hydroids; Hydromedusae; Jellyfish; Sea-anenome)
C 1917–18: 229 (Canadian Atl.; checklist & index)

Hygophum benoiti (*see* Lanternfish, Benoit's)

Hygrometer (*see* Humidity of air)

Hylen, Arvid
SS 1077 (fin whales total mortality rates)

Hypentelium nigricans (*see* Sucker, northern hog)

Hyperactivity (*see* Activity)

Hypercholesterolemia (*see* Cholesterol)

Hyperoodon ampullatus (*see* Whale, bottlenose)

Hyperoodon rostrata (*see* Whale, Atlantic bottlenose)

Hyperprosopon argentum (*see* Seaperch, walleye)

Hypocholesterolemia (*see* Cholesterol)

Hypomesus olidus (*see* Smelt, pond)

Hypomesus pretiosus (*see* Smelt, turf)

Hyporhamphus roberti; H. unifasciatus (*see* Halfbeak, common)

Hypoxanthine
J 17: 449 (re quality deterioration in chinook salmon muscle)

Hypoxia (*see* Anoxia; Oxygen, dissolved)

Hypsagonus quadricornis (*see* Poacher, fourhorn)

I

Iablokov, A. V.
S 870 (harp seal cranial variation)

Ice (for fishery products preservation) (*see also* Glazes; Icing)
J 4: 327, **5:** 36, 224, **7:** 155, **13:** 207 (incorporating various chemical preservatives); **13:** 21 (contamination with bacteria in holds), 861 (re "bilgy" fish spoilage in holds)
B 100, 103 (use in trawler holds)
PRA 24: 9 (bacteria content of natural ice & snow)
PRP 6: 3, **41:** 15, **67:** 36 (incorporating various chemical preservatives); **35:** 18 (comparison of cooling ability of various types), 24 (cracking-resistant); **68:** 52 (antioxidant glaze); **96:** 25, **99:** 18, **100:** 12, **102:** 14, **104:** 7, 9, 19, **110:** 16, **112:** 21 (containing tetracycline antibiotics)
S 375, 404, 438, 440, 466, 468 (containing chlortetracycline antibiotic)
Patent—Canadian No. 552,878 (incorporating antibiotics in block ice)

Ice (on natural waters) (*see also* Jigger; Limnology; Oceanography)
J 5: 236 (temperature & salinity under, in shallow inlet); **13:** 734 (re oceanography of Hebron Fiord, Labrador); **14:** 750 (re Canadian Arctic Archipelago oceanography); **15:** 1175 (discoloration of arctic); **16:** 457 (off Igloolik, N.W.T.), 462 (arctic water re ice formation); **18:** 563 (Foxe Basin)
B 13 (arctic ice on Atl. coast); **134:** 73 (re Atl. oceanography)
CPO 1962-22, -24 (subarctic Pac.)
CSG 16 (chisel re winter fishing)
S 483: 12, **590:** 13, **674, 773** (Canadian Arctic & adjacent waters)
SS 111 (Hudson Bay); **1067** (in Canadian Arctic)

Ice chisel (*see* Chisel)

Ice glazes (*see* Glazes)

Ice jigger (*see* Jigger)

Icing (of fish products) (*see also* Chilling; Ice; Sea water, refrigerated)
J 13: 861 (re "bilgy" spoilage of fish); **20:** 997 (to cool salted fish)
B 49 (halibut in holds); **100, 103** (in trawler holds)
PRA 6: 3 (in fish holds); **36:** 3 (heat transfer to, in holds); **40:** 3 (re leaching of iced gutted cod); **43:** 13 (of railway refrigerator cars); **55:** 17, 24 (contamination in boats at sea); **59:** 15, 18, 22, **62:** 32 (of trawler holds)
PRP 11: 14, **20:** 9, **33:** 17 (significance for halibut); **17:** 13, **19:** 17, **29:** 3, **34:** 18 (railway refrigerator cars); **35:** 18 (comparison of ices for); **88:** 57 (vs. freezing halibut); **92:** 21 (at sea); **95:** 39, **104:** 9, 19 (vs. chilled seawater; correction on **96:** 10)
CHN 1 (proper use at sea)
S 309 (principles; applications; facilities)
SS 691 (use in stowing fish)

Iceland
PRA 70: 28 (recovery of Canadian tagged dogfish)

Icelinus borealis (*see* Sculpin, comb)

Icelinus filamentosus (*see* Sculpin, filamented)

Icelinus tenuis (*see* Sculpin, lesser filamented)

Icelus bicornis (*see* Sculpin, twohorn)

Icelus spatula (*see* Sculpin, spatulate)

Iceworm
SS 577 (on NW American glaciers)

Ichthyomyzon castaneus (*see* Lamprey, chestnut)

Ichthyomyzon fossor (*see* Lamprey, northern brook)

Ichthyomyzon unicuspis (*see* Lamprey, silver)

Ichthyophthiriosis
SS 670 (on hatchery fish)

Ichthyosporidium hoferi (*see* Fungus)

Icichthys lockingtoni (*see* Rudderfish, brown)

ICNAF (*see* International Commission for the Northwest Atlantic Fisheries)

Icosteus aenigmaticus (*see* Ragfish)

Ictalurus lacustris (*see* Catfish, channel)

Ictalurus melas (*see* Bullhead, black)

Ictalurus natalis (*see* Bullhead, yellow)

Ictalurus nebulosis; I. nebulosis nebulosis (*see* Bullhead, brown)

Ictalurus punctatus (*see* Catfish, channel)

Ictiobus cyprinellus (*see* Buffalo, bigmouth)

Ide, Frederick Palmer
S 493 (DDT forest spray effects on aquatic insects)

Identification (*see also* Fishes, lists of; Key; *also* classifying names of organisms)
B 32 (B.C. trouts & game fishes); **64** (B.C. smelts); **68, 68R** (Canadian Pac. marine fishes); **85** (arctic & subarctic Pinnipedia); **127** (B.C. seaweeds); **137** (arctic & E Canadian seals); **140** (Canadian Atl. sharks); **155** (Canadian Atl. marine fishes)
PRP 23: 3 (B.C. sharks); **25**: 9 (B.C. skates & rays); **40**: 3, **62**: 10 (B.C. flatfishes); **46** 6 (B.C. clams); **81**: 84 (whales); **83**: 30 (shrimps)
AF 12d (Atl. lampreys); **12e** (Atl. sharks, skates & rays); **12f** (Atl. chimaeroids)
CNG 32R, 68 (NE Pac. whales, porpoises & dolphins)
CSG 15 (smelt-like Atl. fishes); **19** (herring-like Atl. fishes); **43** (NW Atl. tunas & bonitos)
S 357, 481 (Man. fishes)
SS 155 (Maritimes flatfishes); **389, 540, 700, 701, 773** (Pac. salmons, trouts & chars); **419** (Man. game fishes); **575** (N.S. marine fishes); **1208** (B.C. freshwater fishes)

Idiacanthus antrostomus (a pelagic fish)
J 19: 307 (NE Pac. distribution)

Idiacanthus fasciola (*see* Sawtailfish, ribbon)

Idler, David Richard
J 16: 235, 559 (biochemistry of spawning migratory sockeye salmon; corrections on **16**: 930, 931), 561 (enzyme action on whale solubles viscosity), 679 (seasonal variations in B.C. herring fat, etc.); **17**: 113, 565 (analyses of maturing sockeye organs & tissues; correction on **17**: 943), 597 (marine sterols synthesis), 913 (B.C. herring collagen content); **18**: 93, 113 (liquefied herring animal feed products); **19**: 327 (juvenile salmon olfactory perception); **21**: 539, 1397 (frozen cod polyphosphate treatment) 813 (irradiated scallops storage), 1035, 1543 (scallop sterols), 1519 (sterol metabolism in Atl. oyster)
PRA 73: 3 (obituary of W.R.D. Cossaboom)
PRP 95: 52, **97**: 6 (marine tubeworm fatty alcohol & acids); **95**: 56 (crab shell black discoloration); **98**: 10 (olfactory repellent action on migrating Pac. salmon); **101**: 6, 10, **105**: 27 (B.C. herring stickwater conversion to condensed solubles); **103**: 11 (vitamin A stability), 16 (shrimp waste soluble fertilizer); **104**: 9 (curd in canned salmon re raw fish quality), 16 (changes in fish stored in refrigerated seawater); **108**: 21 (rancidity control); **111**: 23 (condensed herring solubles nutritive value)
CHN 14 (Foreword)
CVG 21 (herring solubles viscosity measurement)
S 371, 380 (tubeworm octanol & fatty acids); **406, 433, 470, 475, 498, 546, 619, 637, 659, 879** (marine sterols); **407, 408** (stickwater bacterial decomposition at high temperatures); **444, 666** (olfactory perception in migrating salmon); **476** (new adenyl-succinic acid derivative); **504** (predicting flesh colour of canned sockeye); **520, 536, 573, 605** (spawning migratory sockeye biochemistry); **522** (salmon liver nucleosides); **564, 692** (isolation of salmon cortisones & cortisol); **610** (herring stickwater viscosity control); **604, 620, 636, 664, 665, 668, 708** (Pac. salmon plasma hormones); **621, 622, 647** (Pac. salmon inositol metabolism); **624** (marine sterols hypocholesterolemic factor); **653** (yeast reduction of steroids); **770** (salmon steroid hormones metabolism); **776** (salmon blood & testes testosterone); **781** (stored

refrozen Atl. cod fillet changes); **856** (Atl. salmon plasma steroid hormones determination methods)
SS 1216 (sockeye spawning migration energy expenditure); **1389** (environmental & physiological effects on Atl. trap cod quality)

Idyll, Clarence Purvis
J 5: 448 (Cowichan L., B.C., trout feed); **6**: 133 (Cowichan R. bottom fauna)

Igloolik (Foxe Basin, N.W.T.)
J 16: 453, **18**: 563 (oceanographic cycles near)

IGY (*see* International Geophysical Year)

Ilex illecebrosus (*see* Squids)

Illumination (*see also* Light, reactions to; Photosynthesis; Phytoplankton; Transparency of natural waters)
J 20: 1103 (control in biological experiments); **21**: 144, 164 (for plankton photosynthesis experiments)
S 27, 43, 103 (photometry)
SS 311, 312 (ecological photometry); **431** (oceanic re biology); **556** (re barnacle growth)

Imostoma shumardi (*see* Darter, river)

Impoundment (*see also* Pond culture)
J 17: 453 (effect on salmon in a brook)

Inconnu (*Stenodus leucichthys*) (*S. mackenziei; S. nelma*)
J 8: 207, **12**: 768 (Great Slave L.); **14**: 599 (phylogeny re other coregonids), 657 (B.C. distribution); **18**: 679 (osteology; phylogeny) ;
B 72: 59 (Great Slave L.); **94**: 9 (Canadian Arctic & Subarctic: description & uses); **107** (in Great Slave L. fishery)
CCG 3: 12 (record size in Great Slave L.)
CNG 64: 72 (productive capacity)
CVI 13 (constituents; proximate analyses; vitamin A)

Index of condition (*see* Condition; Fatness)

Index of return
J 15: 891 (for B.C. salmon)

Indexes of board publications (all included in this present Index)
J 12–21 inclusive (annual indexes to volume at end of issue No. 6 in each volume)
B 110 (Board publications & Studies, 1901–54)
PRA 73: 21 (Atlantic Progress Reports No. 1–73 (end of series))
PRP 60: 3 (Pacific Progress Reports No. 1–60); **80**: 60 (No. 61–80); **100**: 20 (No. 81–100); **114**: 23 (No. 101–114 (end of series))
CNG 47 (Circulars & Industrial Memoranda, 1935–57)

Indian Arm, Howe Sound, B.C. (*see also* Burrard Inlet)
J 18: 907, **19**: 921 (physical oceanography); **21**: 505 (primary production)
PRP 12: 7 (oceanography)
S 123 (oceanography)

Indian fishery (B.C.)
PRP 61: 8, **65**: 77, **70**: 13, **75**: 40, 46, **80**: 50 (Skeena R. salmons); **70**: 10, **72**: 28, **78**: 6 (salmons in Skeena R. drainage system lakes)

Indicator species
J 16: 351, 795 (*Sagitta* in subarctic Pac.); **19**: 271 (for identification of ocean water masses); **21**: 183 (NE Atl. re oceanography)
PRA 23: 13 (jellyfish forecast hurricane)
NRB 5 (*Ceratium* re Nfld. hydrographic conditions)
S 502 (*Themisto* in northern seas); **558** (clam re arctic water); **654, 655, 656, 657, 658, 769, 817, 859** (parasites re Pac. salmons stocks); **762** (*Sagitta* in arctic & subarctic seas); **808** (*Calanus* in arctic & subarctic); **878** (*Lernaeocera* for Atl. cod movements)

Indigo
SS 1279 (woad indigotin content)

Indole
J 16: 747 (production during cod muscle proteolysis)

Infra-red light (*see* Irradiation)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.: *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière: **CHO. CHN**—Halifax: **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews: **CVI. CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Ingalls, Ralph Archibald
PRA 32: 8 (Northumberland Strait mollusc survey); **35:** 3 (soft-shell clam propagation)

Ingvaldsen, T.
SS 341, 342 (analysis of fish meals from fresh vs. putrid fish)

Inheritance
J 14: 573 (of vertebral number in kokanee); **15:** 331 (of sockeye salmon maturity age)

Injury, recovery from
J 21: 347 (Atl. cod)
PRA 7: 12 (torn gills in trout); **52:** 3 (clams)

Inlet and fiord oceanography (*see also* Oceanography; *also* names of inlets and fiords)
J 13: 7 (Alberni Inlet, B.C.), 273 (Bute & Knight Inlets, B.C.), 709 (Hebron Fiord, Labrador); **14:** 487 (Bute Inlet), 605 (freshwater transport re heat budget); **15:** 196 (E Canadian Arctic); **16:** 635 (Knight Inlet currents); **18:** 185, 907 (various B.C.); **19:** 1 (Saanich Inlet, B.C.), 921, **21:** 505 (Indian Arm, B.C.); **20:** 1109 (W coast Vancouver Is.); **21:** 1069 (Nitinat (saline) L., B.C.), 1321 (Sakinaw (saline) L., B.C.)
PRP 12: 7 (off Strait of Georgia); **96:** 3, **97:** 12, **98:** 13, **99:** 9 (B.C. mainland coast: water characteristics, currents, internal waves, oxygen distribution); **100:** 8 (Bute Inlet, B.C.); **103:** 19 (mainland B.C. coast: plankton distribution)
S 123, 623 (Canadian Arctic: infaunal benthos)
SS 451 (B.C. mainland coast: vertical height from bottoms to peaks above); **1088, 1127** (B.C.)

Inopsetta ischyra (*see* Sole, forkline)

Inosine
J 17: 449 (in Pac. salmons muscle), 603 (in lingcod muscle)

Inositol
J 17: 565 (in maturing sockeye salmon tissues)
CVG 24 (in B.C. herring meal)
S 621, 622, 647 (re coho salmon metabolism)

INPFC (*see* International North Pacific Fisheries Commission)

Insecticides
J 18: 287 (hexachlorocyclohexane decay rate in seawater); **20:** 827 (uptake & detoxification in Atl. salmon)
PRA 62: 17, **69:** 3 (effect of DDT, & comparative effects of DDT & malathion, on Atl. salmon)
S 493, 525, 553, 562, 676 (DDT, etc. effects on Atl. salmon via insect feed); **560** (DDT effects on young coho salmon)
SS 1246 (DDT effects on young Atl. salmon)

Insects (*see also* Chironomidae; Dragonflies; Feed studies; Insecticides; Mayflies; Stoneflies)
C 1911–14(II): 53 (Go-Home Bay, Ont.); **1:** 133 (Quill L., Sask.); **2:** 149 (giant water bug); **4:** 185 (Jasper Park), 221 (beetles, Jasper Park)
J 9: 204 (Cultus L., B.C.), 444 (Cowichan L., B.C.); **12:** 495 (Crater L., Ungava)
B 42: 10 (Kamloops region lakes, B.C.)
PRP 13: 8 (Kamloops trout feed); **19:** 3 (squawfish feed)
S 69 (Pac. marine species); **493, 525, 553, 562, 676** (forest spraying effects on, & effects when eaten by Atl. salmon)
SS 125 (luminescent); **207** (Vancouver Is. Hemiptera); **288** (B.C. alpine); **504** (caddisflies eating salmon); **1145** (transplanted to areas denuded by DDT)

Insolation (*see* Heat Budget; Illumination; Temperature)

Inspection for quality (processing plants and products) (*see also* Grading; Quality)
PRA 13: 5 (lobster canneries); **65:** 17 (smelt grading)
PRP 28: 14, **29:** 12, **30:** 11, **32:** 4, **33:** 20 (canned salmon); **97:** 28 (Canadian fish processing plants)
CFI 2 (canned seafoods); **11** (scallop processing plants); **17** (clam processing plants); **22** (plant program & rules for)
CHO 14 (canned lobster)
NRB 10 (berried lobsters)

Instruments (*see* note to heading Apparatus)

Insulation (*see also* Holds; Refrigeration)
B 49: 3 (halibut vessel holds); **103**: 44 (trawler holds); **126**: 11
PRP 5: 7 (jacketed refrigerator room); **8**: 3 (research facilities); **15**: 11 (re desiccation of fish); **17**: 13, **21**: 13, **34**: 18, **86**: 21 (railway refrigerator cars); **20**: 9 (halibut vessel holds); **67**: 27, **70**: 4 (re freezing & cold storage of fish); **93**: 10 (vapour barrier)
S 338 (jacketed refrigerator rooms)
SS 954 (from eel-grass)

Insulin (*see also* Islets of Langerhans; Pancreas)
C 2: 115 (extraction, yields & clinical tests, from Atl. fishes)
B 7 (extraction & yields from Atl. fishes); **54**: 24 (in Pac. cod)
PRP 81: 86 (from fish & whales)
S 17 (extraction, yields, clinical tests); **24** (in marine & freshwater fishes)
SS 232 (in coarse Atl. fishes); **243** (in soft-shell clam); **244** (in Pac. clams); **273** (from fishes)

Intensity of fishing (*see* Effort and intensity of fishing)

International Commission for the Northwest Atlantic Fisheries (ICNAF) (*see also* Groundfish, Atlantic)
J 15: 1150 (purpose)
CSG 40 (re Canadian Atl. fisheries trends)
S 366–369, 497, 497A–497F, 554–557, 584, 584A–584C, 679, 680, 715–717, 723, 724, 729–731, 784–793, 850, 852–854, 874 (reports on Canadian aspects of research on groundfish tagging, growth, populations, maturity, parasites; *also* hydrography, mesh sizes, selectivity & regulations); **850** (selective action of codend meshes & hooks); **852-854** (tagging techniques, returns & mortality, re cod growth); **874** (codend mesh selectivity); **875, 876** (returns from different cod tag types); **877** (redfish tagging); **878** (parasitic copepod as cod movement indicator)
SS 1001, 1063, 1102, 1232, 1353, 1382, 1396, 1398 (same types of reports as first series under S above); **1085** (new mesh regulations); **1123** (salt cod industry interest); **1184, 1192, 1211, 1212, 1238, 1254, 1289, 1300, 1325, 1335, 1336, 1361, 1368, 1415** (length frequencies of groundfishes); **1191** (characteristics of cod catches for salting); **1226** (publicity to encourage tag returns); **1256** (halibut bibliography); **1257** (codend selectivity re chafing gear types); **1321** (report of regulations problems group); **1380, 1381, 1401** (U.S.S.R. fishery in ICNAF area); **1413** (fish discards in Nfld. commercial fishery); **1414** (Nfld. fishing effort and landings statistics)

International Geophysical Year (IGY)
PRA 72: 33 (Canadian Atlantic oceanography; correction on **J 17**: 944)
CPO 1962-24 (oceanographic conditions in polar pack operation)
SS 1116 (oceanographic conditions in polar pack operation)

International North Pacific Fisheries Commission (INPFC) (*see also* appropriate items under Ocean, Pacific; Oceanography, Pacific; *also* biology of the individual species of Pacific salmon; *also* of Salmon (inclusive Pacific species))
PRP 89: 78 (1951 tripartite conference)
S 654–658, 723, 724, 769, 859 (series of reports on Canadian salmon & oceanographic participation); **669** (subarctic Pac. upper zone features); **722** (distinguishing immature from mature salmons); **860** (subarctic Pac. oceanography review re salmons)
SS 1274–1276 (herring fishery abstention)

International North Pacific Fur Seal Commission (*see also* Seal, northern fur)
S 453: 51, **851**: 65 (history & function)

International Pacific Salmon Fisheries Commission (*see also* biology of the individual species of Pacific salmon; *also* of Salmon (inclusive Pacific species); *also* Fraser River)

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S 862 (1959 Fraser R. pink salmon migration & exploitation)
SS 1216 (sockeye salmon spawning migration energy expenditure)

International Passamaquoddy Fisheries Board (The numbered items are those reports of the Board that appeared in the Fisheries Research Board's Journal) (*see also* Passamaquoddy Bay; Tidal energy)
J 17: 127 (1: Introduction), 133 (8: S N.B. herring fishery; correction on **17**: 944), 169 (9: predicted effects on groundfish catches), 175 (10: haddock studies), 181 (11: Bay of Fundy water circulation), 377 (12: oceanographical & biological reconnaissance), 409 (13: plankton re herring feed), 507 (17: anadromous fish passage facilities), 533 (19: possible effects on lobsters), 689 (15: underwater observations of herring), 699 (16: herring vertical distribution), 713 (18: possible effects on anadromous fishes), 721 (20: herring temperature tolerance), 725 (21: herring survival in low salinity), 727 (23: current measurements), 735 (25: exploration for herring), 743 (26: drift-bottle current observations), 815 (29: herring fishery economics), 933 (28: larval herring studies); **18**: 163 (31: probable oceanographic effects), 221 (30: Bay of Fundy & Gulf of Maine herring movements); **19**: 635 (24: herring swimbladder function), 877 (33: clams, scallops, shipworms), 895 (32: herring spawning, hatching & growth), 975 (27: Quoddy region temperature & salinity)
S 211 (International Passamaquoddy Fishery Investigation)
SS 1225 (winter flounder study); **1231** (investigations); **1267** (summary of final report)

Intestine (see Digestibility; Digestive tract; Physiology, digestion)

Introduced species (*see* Exotics; Transplantation)

Inventory (*see also* Census; Fishes, lists of)
S 851 (B.C. fisheries)

Invertebrates (*see also* Fauna *and* subdivisions of invertebrate fauna)
C 1917–18: 229 (check-list of E Canadian marine)

Iodine compounds (*see also* Iodine value; Kelp; Seaweed products; Seaweeds; Thyroid)
C 1911–14(I): 51 (in B.C. marine flora & fauna); **1914–15**: 25, 169 (seaweeds yield of iodine); **1**: 73 (in seawater), 445 (in *Eudistylia* tubes); **4**: 115 (in fish thyroid)
J 16: 7 (in Atl. coastal waters); **20**: 229 (in B.C. whole herring meal)
B 127: 19, 31 (from seaweeds)
PRP 97: 11 (in fish oils)
S 487 (toxicity to bacteria)
SS 85, 107, 108 (distribution in plant & animal tissues)

Iodine value (*see also* Drying of oils; Hydrogenation; Oils and fats; Paint)
B 59, 89 (of various oils; *see* their indexes); **89**: 366 (measuring of)
S 152 (determination method)

Ion ratios (*see also* Oceanography, general)
J 13: 273 (Ca, K, Na in river-diluted seawater)

Iridaea (a red seaweed)
B 127: Fig. 24 (*heterocarpa* as B.C. resource)
CNG 44: 16 (as spawning herring substrate)

Irish lord, brown (*Hemilepidotus spinosus*)
B 68: 243, **68R**: 283 (full description)
S 290 (first B.C. record)

Irish lord, red (*Hemilepidotus hemilepidotus*) (bullhead)
C 1: 285 (feed of)
B 68: 244, **68R**: 284 (full description)
S 290 (B.C. records)

Irish moss (*Chondrus crispus*) (*see also* Seaweed products)
J 15: 1154 (investigations review)
B 127: 28 (uses)
PRA 67: 3 (Grand Manan survey for, including *Gigartina*)
CSG 1, 3, 10 (Maritimes industry & landings)
SS 787 (2-keto gluconic acid from)

Iron compounds
C 1901: 18 (in nail factory effluent)
J 12: 642 (in fish & mammalian livers); **18**: 221 (radioactive, as markers); **20**: 229 (in B.C. whole herring meal)

B 125: 87 (determination of forms in seawater; revision in 1965)
PRA 1: 12 (in piped water toxic to Atl. salmon); **45**: 14, **60**: 3 (in salt: cause of salt fish staining); **49**: 5 (in cod liver residue meal)
CCG 6: 13 (radioactive, for lamprey marking)
CHN 8 (catalyzing off-odours in groundfish)
S 487 (bacteria requirements for); **744** (rancidity promotor in groundfish); **827** (ferric hydroxide activity coefficient)

Irradiation (*see also* Isotopes; Light)
J 21: 37 (ultraviolet (UV) for refrigerated brines), 813, 827 (life of gamma-irradiated scallops & haddock fillets)
PRP 35: 6 (UV to induce fish sunburn); **38**: 3 (UV for fillet preservation); **39**: 16 (UV for sterilizing brining & pickling solutions); **49**: 13, **50**: 12, **63**: 32 (UV for vitamin A assay); **79**: 39 (UV for detecting shell in crab meat), 44 (infra-red, for partial drying of fish before canning)
CHN 18 (for fishery products preservation)
S 672, 718, 719 (electromagnetic, for foods pasteurization & sterilization)
SS 720, 735 (UV as bacterial spoilage inhibitor); **1383** (electromagnetic, for fish preservation)

Irving, Laurence
SS 554 (seal water balance); **555** (seal blood respiratory characteristics)

Isentropic analysis
J 12: 22 (B.C. offshore waters)

Isinglass (*see also* Bladder, swim)
PRP 61: 22 (from fish swimbladders, as blood extender)

Islets of Langerhans (*see also* Insulin; Morphology; Pancreas)
C 2: 115 (of various fishes)
B 7 (of various fishes, re insulin preparation)
S 18 (of elasmobranch & teleostean fishes); **24** (of freshwater & marine fishes); **34** (effect of removal on blood sugar)

Isocapnia **species** (*see* Stoneflies)

Isomerization
B 59, 89 (definitions; applications to oils; *see* their indexes)
S 350 (new alkali method & apparatus); **458** (kinetics of cis-trans in ester hydrogenation)

Isopleths
J 12: 187 (of flounder yields, in pounds & value; correction on **J 12**: 942)

Isopoda (*see also* Gribble)
C 3: 13 (Strait of Georgia & new species)
J 19: 489 (*Mesidotea* in W Arctic); **20**: 387 (resistance of *Asellus* to high temperature and low oxygen); **21**: 971 (redescription of *Holophryxus alaskensis*)
PRP 79: 35 (as cod feed); **99**: 3 (as crab feed)
S 1, 5 (Bay of Fundy & Passamaquoddy Bay); **39** (*Chiridotea* structural & physiological features); **587** (Minas Basin, N.S.)

Isopsetta isolepis (*see* Sole, butter)

Isotherm (*see also* Limnology; Oceanography)
J 12: 13 (B.C. offshore waters)

Isotopes, radioactive (*see also* Biosynthesis traced by radioactive isotopes; Irradiation)
J 18: 383 (iron, for tracing fish); **19**: 149 (caesium, for marking fishes & lampreys)
CCG 6: 13 (for marking lampreys)
CHN 18 (for preserving marine products)
CNG 59 (sedimentation in the sea)
S 630 (containment for sea disposal)
SS 1010 (imported Japanese tuna tested for); **1349** (disposal in Pac. coastal waters)

Isurus nasus (*see* Porbeagle; Shark, salmon)

Isurus oxyrinchus; I. tigris (*see* Mako)

Ivory Island Lightstation, B.C. (*see also* Lighthouse)
PRP 90: 16, **94**: 8, **98**: 6 (daily oceanographic data collection)

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S 473 (classification of daily sea temperatures & salinities)

Iyengar, Jagannath Rangaswamy
J 17: 475 (iced India shrimp spoilage)

J

Jack, amber (*see* Rudderfish, banded)

Jack, crevalle (*Caranx hippos*) (crevalle)
B 155: 248 (full description)

Jack, goggle eye (*see* Scad, bigeye)

Jack, yellow (*see* Runner, blue)

Jack mackerel (*see* Mackereljack)

"Jack" salmon (*see* Salmon, "jack"; Salmon, sockeye)

"Jacket" insulation (*see* Holds; Insulation)

Jackfish (*see* Pike, northern)

Jackson, Frederick Slater
C 1: 297 (fish freezing methods)
S 18 (Langerhans islets tissue in skate)
SS 5 (early Atlantic Biological Station work)

Jackson, Kenneth John
S 343 (Vancouver Is. herring investigation results)

Jackson, Michael
J 17: 347 (maturing sockeye salmon histidine content)

Jain, Vijey Kumar
CPO 1961-9, -13, -14, -17, -24, -25 (N Pac. water mass transport calculations)

James Bay (*see* Hudson Bay)

Jampolsky, Abey
J 11: 57 (spring salmon pituitary growth hormone)

Janes, Lemuel
PRA 73: 17 ("salt fish flavour" in frozen cod fillets)

Jangaard, Peter Michael
J 18: 865 (fatty acids from marine oils); **19**: 605 (cod oil free fatty acids esterification), 839, **20**: 89 (air blowing of marine oils); **20**: 245 (Atl. bottlenose whale oil), 591 (capelin oil fatty acids), 1551 (saury oil fatty acids); **21**: 747 (marine fatty acids origin)
CHN 7 (air-blown oils as lubricant additives); **11** (ambergris identification); **19** (Board publications on by-products, 1950–63)
S 479 (methyl esters from marine oils); **687** (glyceride methanolysis pilot plant); **688** (glycerol recovery from methanolysis); **810, 839** (seal blubber oil fatty acids); **861** (separation of marine oil polyunsaturated C_{16} acids)

Jansen, Jan
SS 380 (northern hagfish brain)

Japan current (*see also* Currents; Drift; Oceanography, Pacific (NE open waters))
J 10: 564 (re oceanic fishes off Japan)
PRP 22: 3, **25**: 21 (re B.C. coast)

Japan fishes
J 10: 560 (collection off NE Japan)

Japanese fishery
SS 1401 (in ICNAF area)

Japweed (*Sargassum muticum* and *Cystoseira geminata*)
B 127: Figs. 2, 3 (on B.C. coast)
CNG 44: 12 (herring use as spawning substrate)
S 701 (hypocholesterolemic agent from)

Jasper Park, Alta.
C 3: 377 (fishes); **4**: 157 (stoneflies), 175 (leeches), 185 (aquatic insects), 197 (feed & growth of fishes), 221 (beetles), 343 (plankton)

Jasus species (*see* Lobster, spiny)

Jaw
B 136: 63 (re *Oncorhynchus* osteology)
PRP 14: 14 (analysis of porpoise jaw oil); **30**: 9 (Salmonidae hooked snouts)
CCG 1: 86 (of seals for age determination)

Jean, Yves Marie Louis
J 20: 497 (N.B. discards of fish at sea); **21:** 215 (winter N.S. cod taggings), 429 (cod seasonal distribution)
PRA 69: 33 (N.B. dragger fishery mesh regulation effects)
CSG 37 (trawled cod discards at sea); **39** (cod migration to Seven Is., Que.)
S 715 (incidental redfish catches)
SS 1242 (Gulf of St. Lawrence cod)

Jeffers, Anne Meredith
J 2: 401 (Atl. herring feed, digestion & fatness)

Jeffers, George William
C 7: 203 (Belle Isle Strait fishes)
J 2: 401 (Atl. herring feed, digestion & fatness)
B 18 (Belle Isle Strait cod fishery)

"Jellied" condition of fish flesh
J 13: 147 (plaice)
B 130: 41 (swordfish)
PRA 19: 3 (swordfish)
CHN 16 (plaice: water content of flesh)

Jellyfish (*see also* Ctenophora)
C 1902–05: 121 (*Aurelia* & *Cyanea* chemical composition); **1917–18:** 229 (checklist & index of Canadian Atl.); **1:** 291 (preying on herring larvae)
J 12: 13 (*Velella* off B.C. coast); **16:** 470 (of Igloolik region, N.W.T.)
PRA 23: 13 (*Salpa* forecast hurricane)
PRP 10: 19, **41:** 14 (sink gill nets); **45:** 24 (*Velella* off Queen Charlotte Is.); **55:** 7 (sting of *Cyanea, Aurelia, Physalia*)
S 5: 2 (Passamaquoddy Bay *Staurophora, Cyanea, Aurelia*); **139** (*Pelagia* in Halifax Harbour)
SS 16 (inorganic composition); **96** (predation on fish eggs & larvae); **140** (*Halimedusa*); **143** (*Aequora* development); **166** (migrations); **350** (*Sarcia mirabilis* natural history)

Jenkin, Norma Lillian (*see also* McLean, Norma Lillian)
J 14: 775 (odours caused by *Pseudomonas* in fish flesh)

Jenkinson, Donald William
J 21: 1267 (scale key for Pac. salmons)
CNG 52 (salmon age & sex composition sampling)
S 501 (contribution to life history of sockeye salmon, No. 42)

Jermolajev, Eugene Germann (nee Kossiackine)
J 15: 1219 (Bay of Fundy zooplankton)

Jervis Inlet, B.C.
J 18: 907 (physical oceanography)
PRP 12: 7 (physical oceanography)
S 123 (physical oceanography)

Jesse, Lake, N.S.
PRA 17: 8 (poisoning undesirable fishes in); **20:** 6 (fish production)
S 137, 206, 213 (fish population); **138, 229** (poisons for removing fishes); **198** (fish survey)
SS 767 (Atl. salmon)

Jewell, George James
PRA 73: 17 ("salt fish flavour" in frozen cod fillets)

Jewett, Stanley Gordon Jr.
J 11: 543 (W North America new stoneflies)

Jigger
J 16: 135 (for setting nets under ice)
CSG 7 (for setting gill nets under ice)
SS 896 (for setting gill nets under ice)

Jigging
B 54: 13 (commercial, for B.C. lingcod)
SS 1144 (Norwegian hooks arrangement for)

Jitts, Harry Rupert
J 21: 139 (phytoplankters cell division rates)

Johannes, Robert Earl
J 18: 203 (redside shiner & rainbow trout feed competition)

Johansen, Frits
C 2: 423 (cunner natural history); **3:** 1 [report on his Hudson Bay amphipods collection; by C. R. Shoemaker]; **6:** 495

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[report on his Hudson Bay copepods collection; by A. Willey]
SS 1411 (Hudson Bay freshwater amphipods)

John, Kenneth Rydal
J 21: 591, 1453 (*Astyanax* retinomotor cycles; schooling)

John Dory (*see* Dory, American John)

Johnson, Bernard Gugy Herbert
PRC 2: 27 (lampricide development & use technique)
CJG 2, 3 (Nfld. groundfish landings & investigations)
CCG 5: 21 (lamprey control by lampricides)
S 639 (colorimetric lampricide concentration determination); **766** (halonitrophenol lampricides physical properties)
SS 1277 (sea lamprey larvicide)

Johnson, Lionel
J 19: 1105 (relict fauna, Greiner L., N.W.T.)

Johnson, Martin Wiggo
J 3: 189 (Atl. zooplankton biology)

Johnson, Ronald Phillip
J 20: 1397 (bigmouth buffalo life history & ecology)

Johnson, Waldo Eugene
J 13: 695, **15:** 961 (young sockeye salmon distribution, Babine L. system); **20:** 919 (young sockeye migration, Babine L. system); **21:** 1321 (seawater in Sakinaw L., B.C.)
S 764 (sockeye ecology aspects)

Johnson, Walter Henry
J 2: 401 (Atl. herring feed, digestion & fatness); **4:** 349 (light effects on herring), 392 (herring feeding habits); **5:** 365 (light effects on copepod herring feed)
SS 652 (light effect on *Acartia* vertical movements)

Johnson, Wesley William
B 104, 123 (midwater herring trawl)
CNG 36 (midwater trawl)
SS 1148 (midwater trawl net headline rope)
Patent—Canadian Nos. 608,969 & 612,992 & Application Case No. 3255 (midwater trawl & appliances)

Johnson Lake, N.B.
PRA 36: 6 (trout angling yields)

Johnston, Marion Lawson
J 4: 363 (addition compound from mackerel & tuna histidine)

Johnston, Robert Laurie
CPO 1960-3 (oceanographic observations from ocean weathership)

Johnston, William Wallace
C 8: 531 (artificial horn plastic from fish muscle)
J 3: 473 (cod & haddock pyloric caeca enzymes); **4:** 363 (mackerel & tuna histidine addition compound); **5:** 217 (Atl. fish organs tryptic enzymes)
PRA 7: 14, **9:** 8 (horn-like plastic from fish protein); **16:** 11 (glue from fish wastes); **18:** 11, **21:** 9 (enzyme for leather bate); **23:** 3 (solids recovery from fish meal effluent); **29:** 11 (oil recovery from pressed liver residue), 17 (swordfish & tuna vitamin A), 19 (sun-rotted cod liver oil); **32:** 11 (rapid fat determination method); **35:** 14 (dogfish liver oil vitamin A)

Johnstone Strait, B.C. (*see also* Oceanography, Pacific (NE coastal waters); Seymour Narrows)
B 31, 74, 96 (pink & chum salmon tagging & migration)
PRP 63: 47, **85:** 79 (salmon tagging); **97:** 9 (age & size of chum salmon); **106:** 24 (young salmons distribution & movements)
SS 1037 (pink & chum salmon tagging)

Jonas, Richard Edmund Ernest
J 17: 125 (maturing sockeye salmon blood plasma analyses), 323 (maturing aquarium coho salmon biochemistry); **19:** 327 (juvenile salmon olfactory perception), 619 (trout & salmon blood *p*H re mortality), 733 (frozen lingcod muscle phospholipid content); **20:** 1145 (frozen lingcod muscle glycolysis); **21:** 653 (lipids utilization by fish)
PRP 105: 27 (B.C. herring stickwater conversion to condensed solubles)
CVG 21 (herring solubles viscosity measurement)
S 547 (salmon muscle Na & K re migration); **615** (stored fish Na & K; weight changes); **666** (migrating salmon olfactory

perception); **832** (lipids utilization by fish); **866** (steelhead trout glycolytic enzymes)

Jones, Ian Chester
S 726 (Atl. hagfish blood corticosteroids)

Jones (Wahleach) Creek and Lake, B.C.
PRP 103: 14, **111:** 18 (pink salmon transplantation)
S 163 (biological survey)
SS 1104, 1105, 1157 (pink & chum salmon planted in artificial spawning bed)

Jones Sound, Canadian Arctic
J 14: 731 (oceanography & currents)

Jonsgård, Åge
SS 1077 (fin whales total mortality rate)

Jordan Harbour, N.S.
PRA 28: 9 (spring haddock run)

Jordania zonope (*see* Sculpin, longfin)

Juan de Fuca Strait (*see also* Georgia, Strait of; Oceanography, Pacific (NE coastal waters))
J 5: 398, **11:** 503, 799 (currents); **11:** 14 (tidal effects); **14:** 241, **321** (water properties & physical oceanography; corrections on **14:** 997, 998); **18:** 311 (temperature & salinity of surface waters), 1027 (oceanographic features)
PRP 95: 48 (tidal currents prediction); **108:** 3 (water masses)
CPO 1964-1 ("slicks" on surface)
S 642 (estuarial embayment physical oceanography)

Judd, William Wallace
SS 1090 (N.W.T. stoneflies)

Jugoslavia
SS 1034 (fish handling & refrigeration)

Juice (*see also* Denaturation; Drip; Fillets; Flesh; Muscle; Nectar, clam)
J 2: 439, 463 (canned salmon: percentage & composition), 457 (of canned pilchard); **5:** 344 (of canned crab, shrimp & clam)
PRP 16: 3 (of canned salmons); **18:** 7 (halibut: bacteria growth in); **33:** 13 (halibut: incipient spoilage detection), 20 (of canned salmons, re inspection); **49:** 3 (halibut: refractive index as freshness criterion); **59:** 19 (halibut: true freezing point)

K

Kabata, Zbigniew
J 21: 681 (*Lernaeopoda centroscyllii* redescription)

Kains Island Lightstation, B.C. (*see also* Lighthouse)
PRP 26: 5, **31:** 16, **86:** 6, **90:** 16, **92:** 6, **98:** 6 (daily oceanographic data)
S 473 (classification of daily sea temperatures & salinities)

Kalamalka Lake, B.C. (*see also* Okanagan Lake)
B 56: 24 (limnological & biological survey)

Kamloops Region, B.C.
B 42 (lakes productivity)

Kamloops trout (*see* Trout, Kamloops; Trout, rainbow; Trout, steelhead)

Kask, John Laurence
J 20: i (Foreword re editorial changes)
B 119: 5 (Foreword); **133:** v (Foreword)
S 702 (Canada's freshwater fisheries prospects); **720** (U.S.S.R. ocean fishing advances); **848** (fisheries in year 2000)
SS 1013 (world fisheries significance); **1158** (Atl. salmon investigation & management); **1188, 1217, 1291** (Atl. salmon conservation); **1218** (1958 Canadian fisheries research); **1219** (Canadian fisheries research golden jubilee); **1243, 1332** (oceanography re fisheries)

Katkansky, Stanley Charles
J 21: 205 (*Mytilicola* parasite in mussel)

Katsuwonus pelamis (*see* Tuna, skipjack)

Kay, William Wayne
J 21: 857 (steelhead trout rigor)

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Keen, Dorothy Jean
J 10: 97 (Bay of Fundy fresh & salt water exchanges)

Keenleyside, Miles Hugh Alston
J 14: 815 (young Pac. salmon light reaction); **19**: 625 (underwater observation of Atl. salmon & trout)
PRA 69: 3 (insecticides effects on young Atl. salmon)
S 553 (insecticides re wildlife); **562** (DDT spray effect on N.B. salmon); **747** (Canadian salmon caught off Greenland)
SS 1189, 1244 (Atl. salmon research program); **1246** (DDT effects on young salmon); **1333** (young Atl. salmon juvenile behaviour)

Keeping, Frances E.
SS 769 (*Shigella* bacteria classification); **786** (*Shigella* synthesis of trimethylamine from choline)

Keewatin District (*see* Northwest Territories; *also* specific localities)

Keleher, James John
J 8: 469 (*Triaenophorus* parasitism re Lake Winnipeg ciscoes taxonomy); **18**: 417 (record-size Great Slave L. fishes); **20**: 319 (tagged Great Slave L. fishes movement); **21**: 643 (angling in N.W.T.)
PRC 1: 41 (Great Slave L. fisheries research); **2**: 3 (research vessel, Great Slave L.)
CCG 1: 1 (editorial introduction to Great Slave L. research reports); **3**: 12 (Great Slave L. fish size records); **6**: 1 (Great Slave L. suckers)
S 357 (Lake Winnipeg region fishes); **448** (Man. cyprinids northern limits); **481** (Man. fishes)

Kelley, Alice Mabel
J 6: 435 (CO_2 tension re herring egg development)

Kelp (various species) (*see also* Algae, marine; Kelp, bull; Seaweed products; Seaweeds)
C 1911–14(I): 51, **1914–15**: 25, 169 (B.C.: iodine content & commercial possibilities); **2**: 503 (*d*-mannitol in)
B 127 (B.C. resources & uses)
PRP 64: 53 (agar & alginic acid); **95**: 45 (vitamin B_{12} content); **100**: 6 (*Macrocystis* as water mass indicator)
CNG 44 (used by spawning herring)
SS 134 (unutilized resource for potash & iodine); **190** (*Macrocystis* pentosans); **272** (W coast Vancouver Is.)

Kelp, bull (*Nereocystis luetkeana*) (*see also* Kelp)
B 127 (B.C. resource & uses)
CNG 44: 14 (used by spawning herring)

Kelpfish, crevice (*Gibbonsia montereyensis*) (*G. elegans montereyensis*; spotted kelp-fish)
B 68: 172, **68R**: 362 (full description)

Kelpfish, spotted (*see* Kelpfish, crevice)

Kelpfish, striped (*Gibbonsia metzi*)
B 68: 173, **68R**: 361 (full description)
S 290 (B.C. range extension)

Kelt (*see* Salmon, Atlantic (biology))

Kendall, William Converse
C 1: 421 (description of 2 collections of northern fishes)

Kennebecasis River and Bay, N.B.
J 17: 377 (estuarine biological oceanography); **18**: 183 (oceanography)
PRA 32: 3 (smallmouth black bass)

Kennedy, Austina Violet
S 829 (Atl. oyster gonad cyclic changes)

Kennedy, Margaret E.
SS 229 (red-discolored cured cod)

Kennedy, Owen David
CPO 1960-5 (E subarctic Pac. zooplankton)

Kennedy, William Alexander
J 7: 176 (Great Bear L. trout), 190 (N Canadian lakes pike); **8**: 264 (lift intervals re gillnet effort); **10**: 53 (Great Bear L. coregonine fishes morphology), 413 (Great Slave L. whitefish); **11**: 284 (Lake Winnipeg whitefish data), 827 (Great Slave L. trout); **16**: 389 (obituary of R. B. Miller); **20**: 265 (whitefish growth & mortality in 3 unexploited northern lakes)
B 76 (whitefish sampling for quality control); **81** (Lake Manitoba sauger & perch data); **82** (Great Bear L. coregonids); **107** (first 10 years of Great Slave L. commercial fishing; correction on **J 14**: 997)
CCG 4: 1 (purpose of scale reading); **5**: 7 (Great Lakes sea lamprey)

S 282 (minimum adult stock for adult spawning); **495** (Canadian Great Lakes current fisheries research); **598** (commercial freshwater fisheries utilization); **863** (great lakes of the world)

SS 816 (sculpin colour change); **855** (sauger & yellow walleye growth rates); **889** (estimating lake populations); **914** (Lake Manitoba optimum gillnet mesh size); **1029** (Great Slave L. commercial fishery); **1078** (Lake Winnipeg goldeye); **1142** (sea lamprey); **1294** (freshwater fisheries research); **1367** (Great Lakes landlocked sea lamprey)

Kent County, N.B.

PRA 65: 3 (oyster mortalities)

Kerr, Robert Bews

J 18: 117 (Atl. salmon growth measurements)

Kerr Lake, N.B.

J 8: 340 (whitefish)

PRA 36: 6 (trout yield to anglers)

Kerswill, Charles James

J 5: 23 (E Canadian pteropods); **7:** 545 (water circulation effects on quahaug & oyster growth); **17:** 713 (Passamaquoddy tidal power project re anadromous fishes)

PRA 30: 3 (quahaug growth); **35:** 18 (bar clam growth); **62:** 17 (DDT effect on young Atl. salmon)

COF 16 (1941 oyster spat failure); **18** (better oyster spat collecting); **19** (improved packing & grading of oysters)

S 279 (P.E.I. green-gilled clams & other bivalves); **398, 415, 529, 676, 745** (Atl. salmon research & management); **399** (angling effects on Atl. salmon stocks); **525** (DDT spray effects on future salmon runs); **632** (Atl. salmon commercial landings, 1910–59); **747** (Canadian salmon caught off Greenland); **969** (Federal–Provincial Atlantic Salmon Committee report)

SS 1030 (Atl. salmon catches, 1949–54); **1031, 1059, 1079, 1119, 1120, 1159, 1189, 1190, 1220, 1245, 1295, 1317** (Atl. salmon research re management); **1118** (1955 salmon scarcity); **1145** (transplanting insects); **1246** (DDT effects on young salmon); **1296** (Foreword to a book)

Kessler, Herman

SS 600 (soft-shell clam growth variations)

Ketchen, Keith Stuart

J 10: 459 (B.C. flatfish population estimation methods); **11:** 335 (B.C. flag rockfish); **12:** 134 (flatfish tag wire corrosion); **13:** 357 (NE Pac. fish yields fluctuations), 647 (Hecate Strait lemon sole survival factors); **18:** 291 (B.C. longfin cod record), 513 (Pac. cod ecology; correction on **21:** 1553); **20:** 851 (B.C. thornback sculpin); **21:** 1051 (Pac. cod growth & mortality)

B 139 (Strait of Georgia trawl fishery review)

PRP 63: 35 (B.C. lemon soles age & growth); **73:** 54 (otter trawl destructiveness tests), 68 (lemon soles development & fecundity); **84:** 64 (lingcod winter trawl fishery); **85:** 75, **104:** 11 (lemon soles migration); **87:** 27 (lemon & rock soles length & age); **88:** 62 (trawling gear working gape); **102:** 10 (Pac. cod fishery trends); **103:** 8 (Pac. cod tagging)

CNG 33 (Strait of Georgia trawl & handline catches, 1952–54); **41** (Strait of Georgia trawl fishery, 1954–55); **61** (Strait of Georgia trawl-mesh regulations)

S 394 (B.C. sablefish fishery)

SS 915 (sampling for age distributions); **970** (B.C. trawl fishery); **1032** (B.C. groundfish investigations)

Ketchum, Bostwick Hawley

J 10: 97 (Bay of Fundy fresh & salt water exchanges)

Ketchum, David Dow

J 14: 931 (transponding drift buoys)

Key for identification of organisms

C 1918–20: 137 (E Canadian hydroids); **2:** 492 (B.C. barnacles)

J 12: 607 (B.C. Chaetognatha); **21:** 933 (*Pholis*), 1267 (Pac. salmons by their scales), 1407 (B.C. pandalid shrimps)

B 32: 11 (B.C. game fishes); **64:** 1 (B.C. Osmeridae); **68:** 18, **68R:** 26 (B.C. marine

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fishes); **155**: 18 (Canadian Atl. marine fishes)

PRP 23: 3 (B.C. sharks); **25**: 9 (B.C. skates & rays); **40**: 3 (B.C. flatfishes); **83**: 30 (B.C. shrimps)

CNG 32R (NE Pac. whales, porpoises & dolphins)

AF (each issue has key to organisms described therein; *see* list of titles in this series)

PF (see note just above)

S 482 (Ungava Bay decapods); **544** (*Lecithophyllum* parasitic trematode species); **826** (eelpouts); **843** (stoneflies)

SS 185 (Atl. Chaetognatha); **844**, **984**, **1208** (B.C. freshwater fishes)

Khan, Muhammed Mujibar Rahman

J 9: 393 (B.C. herring flesh lipoxidase)

Khorana, Har Gobind

SS 1308 (ribonucleoside cyclic phosphates); **1343** (uridyl-adenosine synthesis); **1373** (preparation of nucleotides & derivatives)

Kickininee (*see* Kokanee)

Kidney

J 16: 421 (nucleic acids of sockeye salmon); **17**: 113 (cholesterol in maturing sockeye; corrections on **17**: 943, 944), 323 (composition of coho salmon), 347 (histidine in sockeye), 565 (creatine, inositol, etc. in sockeye); **18**: 349 (nucleoside phosphorylase from salmon), 559 (disease of pink salmon); **20**: 243, 679 (tissue explant culture); **21**: 653 (fatty acid oxidation by salmon tissue)

S 310 (vitamin B_{12} in, B.C. fishes); **335** (separation & assay of vitamin B_{12} in); **866** (glycolytic enzyme in trout)

Kielhorn, William Vineyard

J 9: 223 (Atl. arctic surface zooplankton)

Kilborn, L. J.

SS 198 (glycogen of marine invertebrates & fishes)

Killifish, banded (*Fundulus diaphanus*) (freshwater mummichog; minnow)

C 1911–14(II): 36 (Lake Huron): **1918–20**: 110 (Cape Breton, N.S.)

J 7: 22 (feed vs. supply, Tedford L., N.S.), 94 (thiaminase in muscle & viscera); **16**: 147 (associations in Ont. streams), 818 (Miramichi R., N.B.)

B 155: 172 (full description)

S 137, 213: 407 (Lake Jesse, N.S., population); **206** (of 3 N.S. lakes); **481** (Man.)

SS 302 (trematode ectoparasite)

Killifish, common (*see* Mummichog)

Kiln, smoking (*see* Smoking and smoked products)

Kindle, Edward Martin

C 1917–18: 93 (Atl. *Teredo* habits & distribution), 229 (Atl. marine invertebrates; species index & bathymetry)

Kinetics (*see* subjects of application, e.g. Hydrogenation; Productivity; Refrigeration)

King, Earl Judson

C 7: 119 (seawater silicate colorimetric determination)

S 121 (silica re phytoplankton growth)

SS 326 (picric acid as silica determination colorimetric standard)

King, Hazel M.

C 7: 127 (seawater silicate in Passamaquoddy Bay)

King-fish (*see* Croaker, white)

King-of-the-salmon (*Trachypterus rexsalmonorum*) (*T. trachypterus*)

B 68: 139, **68R**: 173 (full description)

PRP 23: 24, **56**: 16 (B.C. occurrences)

Kingfishers (*see also* Birds; Predators, bird)

J 2: 299, **3**: 323, **4**: 48, **5**: 227, **11**: 388 (belted, as Atl. salmon and trout predator)

B 97 (habits & predation in Maritimes); **133** (re predation & control)

PRA 51: 12 (control re Atl. salmon stocks)

S 216 (digestive process), **507** (predation on hatchery salmon)

Kipper snacks (*see also* Delicatessen)

PRA 39: 14 (from herring fillets)

CFI 6 (canning)

CHO 35 (from herring fillets)

Kippers (*see also* Herring, Atlantic (products); Herring, Pacific (products); Kipper snacks; Smoking and smoked products)

B 47: 21 (from B.C. herring)
PRP 52: 3 (canned); **53**: 9, **57**: 11 (analyses); **59**: 12 (different woods for smoking); **65**: 73 (smokehouse); **66**: 9 (taste panel tests)
CHO 26, 35 (smoking equipment & procedures for Atl. herring)

Kirsch, Milton
J 13: 273 (ionic ratios in river-diluted seawater)

Kitol
B 89: 49, 351 (re vitamin A assay of whale liver oils)
PRP 79: 40, **83**: 28 (whale liver oil ingredient; correction on **84**: 50)

Kitsumgallum Lake, B.C. (*see* Skeena River drainage system lakes)

Kitwanga Lake, B.C. (*see* Skeena River drainage system lakes)

Kiyi (*Coregonus kiyi*)
J 18: 679 (osteology & phylogeny)

Klawe, Witwold Ludwig
B 115 (bloodworm biology & fishery)
SS 1033 (marking method for marine worms); **1080** (additional N.S. flora); **1081** (a new E Canada Malacostraca)

Kleerekoper, Herman
J 10: 283 (plankton mineralization); **11**: 130 (sound perception in fishes); **13**: 375, **14**: 145 (sea lamprey electrical "spike" potential)

Klemtu Passage, B.C.
PRP 30: 3, **39**: 21 (herring)

Klugh, Alfred Brooker
C 1906–10: 265 (N.B. flora); **1911–14(II)**: 219 (Georgian Bay aquatic plants); **1915–16**: 79 (Passamaquoddy Bay marine algae); **1918–20**: 181 (Miramichi R. new algal species); **6**: 41 (marine algae photosynthesis under different light wavelengths)
S 9 (new cyclocypris ostracod); **27** (ecological photometry & new photometer); **29** (coloured light re protozoan reproduction); **37** (lakes productivity); **43** (light penetration into waters); **48** (marine algae growth re depth); **50** (freshwater Entomostraca ecology); **79, 104, 110** (ultraviolet effects on various marine organisms); **103** (field ultraviolet photometer); **105** (E Canada astrophysical data)
SS 30 (NaCl excretion by *Spartina*); **35** (flora of a N.B. marsh); **67** (Georgian Bay plant formations); **68** (Georgian Bay algae); **217, 293** (Canadian Entomostraca); **234** (a new American cladoceran); **235** (*Pagurus* vision acuteness); **236** (Enteromorpha ecological polymorphism); **237** (sea harvest); **238** (giant squid re "sea serpents"); **255** (Biological Board work); **256** (*Cucumaria* habits); **257** (plant & animal ecological classification); **269, 275** (tidepool biota controlling factors); **294** (*Daphnia magna* pH range); **311, 312** (ecological photometer); **556** (light re *Balanus* growth)

Knight, Archibald Patterson
C 1901: 9 (pollution effects on fish); **1902–05**: 21 (dynamiting effects on fish), 37, 111 (sawdust pollution effects); **1906–10**: 23 (various cod bait tests); **1914–15**: 41, **1917–18**: 53 (N.S. lobster sanctuaries & hatching ponds); **1918–20**: 185 (lobster-claw tendon histology)
B 6 (lobster canning standard pickle)
SS 2, 11 (early Atlantic Biological Station work); **15, 17** (sawdust pollution effects); **131, 147, 156, 173, 239, 285** (lobster habits, fishery, conservation); **258** (lobster factory sanitation & grading); **270** (lobster canning report)
J 3: 185 (obituary of)

Knight, Arthur Robert
SS 1213 (hydrogen bonding)

Knight Inlet, B.C. (*see also* Inlet and Fiord oceanography)
J 13: 273 (ion ratios in river-diluted seawater); **14**: 605 (physical oceanography); **16**: 635 (current measurements); **18**: 907 (oceanography)
PRP 97: 12, **98**: 13 (oceanographic phenomena)

Koch, Lyle Ward
C 4: 77 (Canadian Rotifera notes)

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Kogia breviceps (*see* Whale, pigmy sperm)

Kohler, Allan Carl
J 15: 1229 (validity of haddock age from otoliths), 1239 (haddock scale–otolith age comparisons; correction on **16:** 929); **17:** 41 (haddock growth & maturity); **21:** 57 (Atl. cod growth), 837 (Atl. halibut movements)
PRA 72: 3 (captive cod growth); 852 (tagging data re cod growth)
SS 1247 (cod feeding & growth changes); **1335, 1336, 1368** (ICNAF Canadian groundfish length frequency data)

Kokanee (***Oncorhynchus nerka kennerlyi***) (landlocked sockeye salmon)
C 1917–18: 105 (artificially induced by ponding)
J 4: 192, **16:** 897 (Cultus L., B.C. & origin); **7:** 88 (sea-run development from); **11:** 681 (parasites); **12:** 499 (Skeena R. system lakes); **14:** 573 (Kootenay L., B.C., 3 races), 655 (B.C. distribution); **15:** 961 (Babine L., B.C.)
B 32: 42 (B.C.); **55:** 33 (feed; predation by mergansers); **56:** 29 (Okanagan L., B.C.); **68:** 89, **68R:** 121 (full description, under sockeye salmon); **84:** 13 (Cowichan R. system, B.C.)
PRP 19: 6, **32:** 15 (attempt to induce sea-run); **19:** 34 (in squawfish feed); **70:** 10, **72:** 28: **74:** 6, **78:** 6 (in lakes of Skeena R. drainage)
S 144: 61 (B.C. distribution); **237** (origin in B.C.); **884** (haemoglobin patterns of young)
SS 7 (adaptation to freshwater); **607** (general); **701** (external characteristics); **1208:** 82 (full description)

Komarov, Simon Andrew
C 7: 11 (skate gastric juice), 57 (dog gastric juice secretion), 439 (skate skin extractives); **8:** 123, 131 (haddock muscle non-protein nitrogen)

Kootenay Lake, B.C.
J 2: 359 (Kamloops trout biometrics); **14:** 573 (kokanee races); **16:** 897 (kokanee egg source); **21:** 1325 (introduction of *Mysis relicta*)

Kooyman, Burt
S 481 (Man. fishes)

Koran, P.
SS 737 (muscle autolysis of active vs. less active fish)

Kossiackine, E. G. (*see* Jermolajev, E. G.)

Kovačevic, Matija
S 455 (frozen vs. unfrozen sardines for canning)

Kressler, Herman
SS 657 (quahaug growth index variations)

Kristjanson, Svava
PRP 88: 51 (cholesterol from B.C. halibut liver oil)

Krvarić, Mira
S 455 (frozen vs. unfrozen sardines for canning)

Kuchel, Clemens Carl
J 4: 174 (vitamin A adsorption); **5:** 203 (cod muscle juice buffering capacity)
PRP 36: 14 (winning vitamin A by soap formation)

Kuitunen-Ekbaum, Ella (*see also* Ekbaum, Ella)
C 8: 71, 161 (B.C. fish nematode parasites), 89, 99 (B.C. fish cestode parasites)
J 7: 505 (red snapper copepod parasite)

Kuralon (*see* Fibres, synthetic)

Kurata, T. B.
SS 313 (Chamcook L., N.B., fishes)

Kwakshua Passage, B.C.
PRP 41: 10, **42:** 12, **59:** 3 (herring run & tagging)

Kyuquot Sound, B.C.
J 20: 1109 (oceanography of inlets off)
B 26 (salmon tagging & returns)
PRP 100: 19 (unusual catch of sturgeons)

L

Labarre, Jules
SS 751 (cod fillet changes with time & temperature)

Labidesthes sicculus (*see* Silverside, brook)

Labrador (*see also* Belle Isle, Strait of; Newfoundland; Oceanography, Atlantic (NW coastal waters))
J 10: 177 (coastal oceanography); **13**: 149 (herring), 709 (Hebron Fiord oceanography), 843 (arctic char); **14**: 135, 141 (salmon tagging), 221 (waters as water masses source), 831 (seals distribution)
B 141 (cod longlining)
PRA 70: 3 (inshore cod catches)
CJG 10: 1 (coastal fishery investigations, 1962)
NRB 12 (salmon obstructions); **13** (Atl. salmon)
S 841 (lake systems & limnology)
SS 1004 (whaling industry)

Labrador Sea (*see also* Oceanography, Atlantic (NW open waters))
J 21: 1475 ($CaCO_3$ saturation extent)

Labrie, Arthur
J 3: 439 (salt concentration in salt fish preservation)
PRA 21: 6 (cod liver oil extractor); **21**: 12, **23**: 5, **27**: 16 (course for fishermen); **23**: 13 (notice re Gaspé Station Circulars); **24**: 17 (air humidity significance in fish drying); **27**: 7 (canning cod livers)

Lachance, Robert André
J 9: 157 (halophilic bacteria culture media)

LaCroix, George Wilfred
J 11: 853 (Seymour Narrows, B.C., mean sealevel anomaly)

Lactic acid; Lactates (*see also* Preservatives)
C 3: 437, 457 (re rigor mortis)
J 4: 412 (oxidation during flesh spoilage); **12**: 899, **14**: 117, 645, 807, **15**: 573, **16**: 95, 321, 391, 429, **17**: 487, **19**: 619 (in salmon & trout blood after exercise or struggling); **15**: 36 (re hatchery trout mortality; correction on **16**: 386); **18**: 321, 641 (re rigor); **19**: 1145 (in frozen lingcod muscle), 1183 (in brine-frozen & thawed tuna); **21**: 255 (levels in migrating salmonids), 1539 (effects on anaesthesia in rainbow trout)
PRA 24: 3, **26**: 3 (for fillet preservation)
PRP 114: 19 (in frozen tuna flesh)
S 38, 52 (role in rigor); **52** (in fish & crustacean muscle); **207** (re fish mortality after struggling)

Lactobacillus
PRP 24: 97 (for autolyzing herring); **98**: 3 (inhibitor for browning of heated flesh)
S 428 (*B. leichmanni* for vitamin B_{12} assay)

Lactophrys trigonus (*see* Trunkfish)

Ladd, J. N.
SS 1330 (a nucleoside from coenzyme B_{12})

Ladysmith Harbour, B.C. (*see also* Oyster, Pacific)
J 4: 53 (new *Paphia* clam species)
B 34 (oyster culture)
PRP 15: 3 (oyster breeding); **102**: 20 (oyster propagation); **105**: 3 (shipworm growth)

LaFond, Eugene Cecil
SS 1047 (Bering & Chukchi seas physical oceanography)

Laframboise, André
J 15: 555 (salt cod phospholipid fatty acids); **18**: 851 (salt cod chemical characteristics)
PRA 59: 27 (soap from seal oil); **62**: 10 (recovery of cod bile); **65**: 21 (cod bile acids)

Lagenidium (fungal parasite)
S 690 (on *Coscinodiscus* diatom)

Lagenorhynchus acutus (*see* Dolphin, white-sided)

Lagenorhynchus albirostris (*see* Dolphin, white-beaked)

Lagenorhynchus obliquidens (*see* Dolphin, Pacific striped)
Lagocephalus lagocephalus (*see* Puffer, oceanic)

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Laird, Marshall
S 563 (*Caliperia* epizoic on *Raja*); **648** (factors in oyster epizootics); **748** (new *Urceolaria* ciliate from *Ischnochiton*)

Laishley, Edward
S 781 (stored refrozen Atl. cod fillet changes)

Lake . . . . (*see* name of lake; *also* Lakes, (in general))

Lake herring (*see* Ciscoes)

Lakelse Lake, B.C.
J 8: 82 (limnology), 103 (sockeye salmon); **11**: 479 (plankton); **12**: 499 (limnology & whitefishes ecology)
PRP 42: 7, **43** 14 (sockeye run); **62**: 4 (sockeye tagging); **66**: 12 (limnology; salmons & their predators; other fishes); **71**: 11 (sockeye marking); **74**: 5 (winter sockeye egg survey); **82**: 17 (sockeye egg counts); **87**: 37 (marked sockeye returns), 39, **92**: 18 (creel census); **88**: 65 (sockeye spawning escapement); **93**: 30 (sockeye & coho emigrants); **97**: 32 (autumn operations); **99**: 24, **106**: 14 (guiding sockeye fingerlings); **104**: 34 (sockeye fry production), 38 (trout sport fishery)
SS 1048 (sockeye research)

Lakes (in general) (*see also* Limnology; Population studies)
J 12: 543 (areas re standing fish crops); **16**: 923 (average vs. maximum depths)
PRP 11: 10 (trout growth in barren)
S 863 (problems of large)
SS 418 (fish populations re productivity)

Lakes, saline (totally or partially)
J 20: 1109, **21**: 1069 (tidal Nitinat L., B.C.); **21**: 1321 (deep water in Sakinaw L., B.C.)
S 278 (P.E.I. semi-tidal ponds biology); **762**: 89, **791**: 105 (semi-tidal Ogac L., Baffin Is.)
SS 1313 (ancient seawater in Powell L., B.C.)

Lam, Kwok-Cheung
J 19: 409 (glycogen, lactate, etc. changes in exercised trout)

Lambert, Derwent Graham
J 17: 235 (Nfld. area redfish feed)

Lamellibranchiata (*see* Bivalves; Pelecypods)

Lamina, infraoral
J 18: 1125 (of sea lamprey)

Laminaria (*see also* Algae, marine; Kelps; Seaweed products; Seaweeds)
B 127: 14 (B.C. resource & uses; *L. saccharina* in Fig. 6)
CNG 44: 13 (*L. bullata* used by spawning herring)

Laminaria bullata (*see* Devil's apron)

Lamna cornubica; L. nasus (*see* Porbeagle)

Lamna ditropis (*see* Shark, salmon)

Lampadena speculigera; L. braueri (*see* Lanternfish, mirror)

Lampanyctus crocodilus (*see* Lanternfish, jewel)

Lampanyctus leucopsarus (*see* Lanternfish, smallfin)

Lampanyctus regalis (*see* Lanternfish, pinpoint)

Lampanyctus ritteri (*see* Lanternfish, broadfin)

Lamper (*see* Lamprey, sea)

Lampetra ayresii (*see* Lamprey, river)

Lampetra fluviatilis (*see* Lamprey, European river)

Lampetra japonica (*see* Lamprey, arctic)

Lampetra lamottei (*see* Lamprey, American brook)

Lampetra planeri (*see* Lamprey, western brook)

Lampetra tridentata (*see* Lamprey, Pacific)

Lamprey, American brook (*Lampetra lamottei*) (*Entosphenus lamottei*)

J 17: 267 (description of young ammocoetes); **19**: 149 (marking with radioactive caesium)

Lamprey, arctic (*Lampetra japonica*) (*Entosphenus japonica*)
J 8: 221 (Great Bear L.)

B 94: 5 (Yukon & Mackenzie Districts); **107** (Great Slave L.)

Lamprey, chestnut (*Ichthyomyzon castaneus*)
CCG 3: 4 (parasitic in Great Lakes)
S 357 (Lake Winnipeg area); **481** (Man.)

Lamprey, European river (*Lampetra fluviatilis*) (*see also* Lamprey, river)
J 15: 47 (distinction from *L. ayresii*); **16**: 515 (seasonal "races")

Lamprey, northern brook (*Ichthyomyzon fossor*) (Michigan brook lamprey)
J 16: 147 (association in Ont. streams)
PRC 1: 22 (in Lake Huron streams); **2**: 14 (in a Lake Erie stream)

Lamprey, Pacific (*Entosphenus tridentatus*) (*Lampetra tridentata;* sea lamprey)
J 8: 275 (on & in whales); **9**: 447 (Cowichan L.); **11**: 679 (parasites); **14**: 655 (B.C. freshwater distribution); **15**: 47 (B.C. records); **16**: 838 (Hooknose Creek, B.C.); **21**: 977 (effect on lake trout distribution), 1083 (distasteful to B.C. fishes)
B 68: 47, **68R**: 68 (full description)
PRP 29: 8, **97**: 3 (description & life history); **83**: 27 (in whale feed); **104**: 15 (predation on coho salmon fingerlings)
S 36 (velar apparatus); **144**: 60 (B.C.)
SS 1208: 26 (full description)

Lamprey, river (*Lampetra ayresii*) (western lamprey)
J 14: 655 (B.C. distribution, as *L. fluviatilis*); **15**: 47 (description & records); **16**: 838 (Hooknose Creek, B.C.)
B 68R: 69 (full description)
S 144: 60 (Cultus L., B.C.)
SS 1208: 29 (full description)

Lamprey, sea (*Pteromyzon marinus*) (American lamprey; lamper; lamper-eel) (*see also* Lamprey, Pacific; Lampricides)
J 13: 375, **14**: 145 (producing electrical potentials); **16**: 810 (Miramichi R., N.B.); **17**: 267 (description of young ammocoetes), 583 (electrical impulses); **18**: 1125 (infraoral lamina types); **19**: 149 (marking with radioactive caesium); **20**: 483 (developmental stage lethal temperature); **21**: 239 (serum protein patterns), 977 (effect on lake trout distribution)
B 155: 21 (full description)
PRC 1: 3 (Lake Superior control program), 6, 9, 15, 18 (design, establishment, operation & maintenance of electrical barriers); **1**: 22, **2**: 32 (Lake Huron lamprey control preparations); **2**: 14 (ammocoete biology), 18 (electrical barriers galvanotaxis action), 21 (re fish movements in Silver Creek, Ont.), 25 (electric barriers in Lake Superior Canadian tributaries), 27 (lampricide development & use techniques), 36 (non-effect of ultrasonics on)
CCG 3: 1 (taxonomy), 4 (as food); **5**: 7 (re invasion into Great Lakes), 21 (chemical control); **6**: 13 (radioactive marking)
AF 12d: 3 (description)
S 155 (off N.S.); **234** (off P.E.I.)
SS 1142 (Great Lakes control efforts); **1255** (Ont. fishery & smoking for food); **1367** (Great Lakes landlocked)

Lamprey, silver (*Ichthyomyzon unicuspis*)
PRC 1: 22 (in Lake Huron streams); **2**: 14 (in a Lake Erie stream)
S 481 (Man.)

Lamprey, western (*see* Lamprey, river)

Lamprey, western brook (*Lampetra planeri*)
J 9: 447 (Cowichan L., B.C.); **14**: 655 (B.C. distribution); **21**: 1083 (distasteful to B.C. fishes)
SS 1208: 28 (full description)

Lampreys (general)
C 1911-14(II): 9 (Georgian Bay, Ont.)
CCG 1: 4 (N American & European food species)
SS 10 (general); **146** (E Canadian)

Lampricides (*see also* Lamprey, sea)
PRC 2: 27 (development & application for Great Lakes)
CCG 5: 21 (history of application in Great Lakes)

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S 639 (colorimetric determination in streams); **766** (physical properties of halonitrophenolic)
SS 1277 (selective for larvae)

Lampris regius, L. luna (*see* Opah)

Lampritrema nipponicum (parasitic nematode)
S 699 (in N Pac. pomfret & salmons)

Lampritrematidae (parasitic nematodes)
S 699 (family status)

Lamsa, Aarne
J 20: 587 (brook stickleback downstream movements)
PRC 2: 21 (fish & lamprey movements in a creek)

Lancaster Sound, Canadian Arctic (*see also* Oceanography, Arctic)
J 14: 731 (oceanography & currents)

Lances (*see* Sand lance; Sandlance)

Lancet, scaled (*see* Barracuda, white)

Lancetfish, lesser (*see* Daggertooth)

Lancetfish, longnose (*Alepisaurus ferox*) (handsaw-fish)
J 16: 507 (off Lahave Bank); **17:** 731 (near Sable Is. Bank)
B 155: 150 (full description)

Lancetfish, Pacific (*Alepisaurus borealis*) (*A. aesculapis; A. richardsoni;* handsaw fish)
B 68: 119, **68R:** 156 (full description)
PRP 41: 22 (northern B.C. specimens)

Lancetfish, scaled (*Paralepis coregonoides borealis*)
J 17: 238 (as redfish feed)

Lancetfish, shortnose (*Alepisaurus brevirostris*)
B 155: 150 (possible occurrence off Maritimes coast)

Lander, Robert Harry
J 19: 159 (mortality rates from change in population composition)

Landings (*see also* Catches; names of international commissions; Statistics, fishery and catch)
CCG 1 (Great Slave L. winter fishery)
CJG 1–11 inclusive (Nfld. groundfish, 1953–63)
CNG 12, 17 (B.C. albacore); **33** (Strait of Georgia groundfish)
CNS 1–11 inclusive, **13** (B.C. trawl fisheries by areas, 1945–63); **12** (B.C. & Pac. U.S.A. trawl fisheries, 1959–61)
CSG 2 (Atl. offshore, 1938–40); **13** (eels); **18** (seals); **24** (lobsters, 1870–1953)
CSS 1–6 inclusive (N.S., 1947–1952); **7, 8, 9** (Maritimes area, 1953–1955)
S 632 (Atl. salmon, commercial, 1910–1959)
SS 759 (Great Lakes Canadian fisheries, 1867–1939)

Landlocked salmon (*see* Kokanee; Salmon, Atlantic landlocked)

Lane, Robert Kenneth
J 19: 45 (temperature & salinity structures near Vancouver Is.); **20:** 939 (seasonal oceanographic cycle off Vancouver Is.)
CPO 1960-7, -16, -24, -31, 1961-4, -12 (B.C. coastal surveys oceanographic observations)

Lang, R. S.
SS 199 (reducing substances in invertebrate & fish fluids)

Langara Island Lightstation, B.C. (*see also* Lighthouse)
PRP 90: 16, **91:** 3, **92:** 6, **98:** 6 (as oceanographic data collecting station)
S 473 (classification of daily temperatures & salinities)

Langbarn (*see* Shanny, daubed)

Langerhans, islets of (*see* Insulin; Islets of Langerhans; Pancreas)

Langford, Raymond Robert
J 10: 238 (plankton sampler & collection)

Langille, Winston Murray
J 16: 7 (Atl. coastal seawater composition; correction on **16:** 930)

Langstroth, George Otty
C 6: 375 (fish muscle thermal properties)
S 101 (fish muscle heat capacity); **109** (fish muscle freezing rate)

Lanigan, John Arthur
S 327 (Vancouver Is. herring investigation results)
SS 923, 948 (Vancouver Is. herring investigation results)

Lanternfish, Benoit's (*Hygophum benoiti*)
B 155: 143 (possible occurrence in Canadian Atl.)

Lanternfish, bigeye (*Electrona arctica*) (*E. thompsoni*)
J 19: 271 (NE Pac. distribution)
B 68: 110, **68R:** 140 (full description)

Lanternfish, bigfin (*Myctophum californiense*)
J 19: 271 (NE Pac. distribution)
B 68: 113, **68R:** 143 (full description)

Lanternfish, blue (*Tarletonbeania crenularis*)
J 19: 271 (NE Pac. distribution)
B 68: 111, **68R:** 141 (full description)

Lanternfish, broadfin (*Lampanyctus ritteri*)
J 19: 271 (NE Pac. distribution)
B 68R: 148 (full description)

Lanternfish, Cocco's (*Gonichthys coccoi*)
B 155: 143 (reported Atl. occurrences)

Lanternfish, fangtooth (*Ceratoscopelus townsendi*)
J 19: 271 (NE Pac. distribution)
B 68R: 149 (full description)

Lanternfish, glacier (*Benthosema glaciale*) (*Myctophum glaciale*)
J 9: (Ungava Bay); **17:** 235 (as redfish feed)
B 155: 141 (full description)

Lanternfish, horned (*Ceratoscopelus maderensis*)
J 17: 235 (as redfish feed)
B 155: 142 (description)

Lanternfish, jewel (*Lampanyctus crocodilus*)
J 9: 106 (in Ungava Bay cod stomachs)
B 155: 143 (description)

Lanternfish, Krøyer's (*Notoscopelus krøyeri*)
B 155: 145 (full description)

Lanternfish, largescale (*Symbolophorus veranyi*) (*Myctophum humboldti*)
J 16: 506 (off N.S.)
B 155: 146 (full description)

Lanternfish, metallic (*Myctophum affine*) (*M. opalinum*)
B 155: 144 (description)

Lanternfish, mirror (*Lampadena speculigera*) (*L. braueri*)
J 16: 506 (off N.S.)
B 155: 143 (in Atl. swordfish stomachs)

Lanternfish, patchwork (*Notoscopelus re splendens*) (*N. elongatus)*
J 17: 235 (as redfish feed in Atl.)
B 68R: 150 (description, in Pac.)

Lanternfish, pinpoint (*Lampanyctus regalis*) (small-eyed lanternfish)
B 68: 116, **68R:** 147 (full description)

Lanternfish, small-eyed (Atlantic) (*Cyclothone microdon*) (*see also* Anglemouth, veiled)
J 16: 506 (in Fox R., Que.)

Lanternfish, small-eyed (Pacific) (*see* Lanternfish, pinpoint)

Lanternfish, smallfin (*Lampanyctus leucopsarus*)
J 19: 271 (NE Pac. distribution)
B 68: 115, **68R:** 145 (full description)

Lanternfish, spotted (*Myctophum punctatum*)
J 16: 506 (on Grand Banks); **17:** 235 (as redfish feed)
B 155: 144 (full description)

Lanternfish, theta (*Diaphus theta*) (*D. rafinesquii;* white-spotted lanternfish)
J 19: 271 (NE Pac. distribution)
B 68: 114, **68R:** 144 (full description)

Lanternfish, white-spotted (*see* Lanternfish, theta)

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Lanternfishes (Pacific)
J 19: 300 (*Electrona crockeri* in NE Pac.), 307 (*Diogenichthys atlanticus* NE Pac. distribution)

Lantz, Andrew William
B 126 (freshwater fish preservation in chilled water)
PRP 66: 9 (variously prepared kippers taste appeal); **72:** 33 (B.C. herring products); **73:** 58 (waste fish flesh recovery machine); **74:** 19 (freshwater fish canning); **75:** 35 (smoking freshwater fishes); **76:** 78, **88:** 66 (utilization of freshwater fish trimmings & offal); **77:** 100 (mechanically refrigerated railway car), 114 (fish-scaling device), 118 (small-scale fish-reduction apparatus); **78:** 17 (air-conditioned processing tunnel); **79:** 41 (shrimp-sorting machine); **81:** 80 (fillet quality re mechanical washing of fish), 83 (canned oyster soup & stew), 87 (commercial vertical-conveyor smokehouse); **82:** 6 (fillet-dipping apparatus); **83:** 45 (fish-glazing time study); **84:** 51 (preparation & application of brines & dips); **87:** 34 (Dungeness crab processing); **88:** 57, **92:** 21 (freezing B.C. fish at sea); **89:** 76 (jacketed refrigerated display cabinet), 82 (B.C. shrimp processing); **93:** 10 (insulation studies), 18 (freshwater fish meal); **95:** 39 (chilled seawater for transporting fish; correction on **96:** 10)
PRC 1: 28 (canning Lake Erie smelts), 38 (chilled freshwater for transporting freshwater fish); **2:** 5 (Lake Erie gear development), 37 (canning freshwater fish), 53 (freshwater fish grading equipment)
CCG 3: 8 (proposed pilot processing plant, Aklavik, N.W.T.); **4:** 10 (freshwater fish specialty products); **6:** 17 (whitefish sausage)
CVI 7 (fish specialty products)
S 728 (Mackenzie Delta pilot processing plant); **738** (Ceylon fisheries trawler harbour); **882** (Ceylon cold storage plant)
SS 996 (refrigeration aspects); **1109** (Ceylon *Salvinia* for fish preservation); **1114** (salting & drying Ceylon fish); **1115** (Ceylon trawled fish physical analysis); **1117** (chilled seawater for fish preservation); **1160** (Canadian aid in Colombo Plan); **1175** (canning suckers); **1292** (developing new freshwater fish products); **1293** (Lake Erie gear development); **1334** (marine fish specialty products); **1390** (Ceylon fish processing plant); **1403** (Ceylon fish preservation); **1404** (Ceylon fishery by-products); **1405** (Ceylon dolphins commercial use); **1406** (Ceylon trawler fish keeping quality); **1407** (Oru mechanization), **1408** (Ceylon fishes chemical analyses); **1410** (processing freshwater fishes)

Lapworth, Edward Donald
J 13: 547 (fry plantings effect on Lake Ontario whitefish production)

Laredo Inlet, B.C.
J 18: 907 (oceanography)
PRP 45: 12 (herring)

Large, Robert Geddes
SS 530 (vitamin oils clinical tests); **653** (hypoglycaemic extract from devil's club roots)

Largue, Robert
PRP 35: 3 (obituary of)

Larkin, Peter Anthony
J 13: 327 (freshwater fish interspecific competition), 515 (B.C. lakes productivity indices); **16:** 429 (trolled salmon fatigue & mortality), 721 (fish growth concept); **18:** 203 (redside shiner & rainbow trout feed competition); **20:** 647 (interspecific competition & exploitation); **21:** 1 (sustained yields from fluctuating environments), 477 (theoretical reproduction curves), 1245 (salmon population model), 1325 (*Mysis relicta* in Kootenay L., B.C.)
B 78 (N Canada lakes *Pontoporeia* & *Mysis*)
S 842 (fish-marking mortality aspects); **851** (past & future B.C. fisheries)
SS 1371 (W Canada limnology); **1391** (fauna of dead oak wood); **1399** (Adams River, B.C., cyclic dominance of sockeye salmon)

La Ronge, Lac, Sask.
J 17: 607 (benthos); **18:** 423 (trout)

Larsen, Bjørn Andreas
J 18: 85 (protein quality of protein concentrate, liver meal & viscera meal)

Larvae (*see also* cognate subjects such as Embryology and development; Growth; Life history; Reproduction; Zooplankton; *also* biological references under the names of individual animal organisms)

C 1902–05: 1 (E N.S. marine invertebrate); **1**: 336 (*Cancer amoenus*)

J 14: 729 (bird predation on lobster), 899, **16**: 763 (redfish); **15**: 1451 (distribution of Atl. herring; correction on **17**: 943); **17**: 409 (invertebrate, re Atl. herring feed), 933 (Atl. herring); **19**: 735 (Pac. herring); **21**: 9 (development of Pac. cod), 661 (abundance & distribution of lobster), 1155 (movements of molluscan, introduced into B.C.), 1333 (eulachon)

B 73 (E arctic fishes)

PRA 19: 6, **22**: 8 (poisoning of shipworm); **39**: 11 (production of smelt)

PRP 23: 7, **52**: 12 (settling of shipworm)

CNG 63 (Pac. herring)

S 603, 604 (growth rate & development of *Bankia*); **717** (summer surface distribution of redfish); **732** (neotony of Spionidae)

SS 96 (medusae predation on fish); **127** (identification of Pac. herring); **179** (Gulf of St. Lawrence and arctic fishes); **221** (echinoderms); **323** (international co-operation for investigation of pelagic); **337** (clams); **733** (*Crago septemspinosus*)

Lasker, Reuben

J 19: 867 (Pac. sardine yolk utilization)

Latent heat (*see* Heat)

Lateral line

SS 817 (organ development in salmonids)

Latin square

J 8: 369 (for effect of digging frequency for clams)

PRP 69: 63 (re clam digging)

Lauder, John Tweedie

J 21: 1397 (polyphosphate treatment of frozen cod)

S 801 (myosin-B extract sedimentation patterns)

SS 1389 (factors affecting trap cod quality)

Launces (*see* Sand lance; Sandlances)

Laurentian Channel (*see also* Gulf of St. Lawrence; Oceanography, Atlantic (NW coastal waters))

J 13: 435 (oceanography); **15**: 1247 (water layers)

S 471 (submarine topographic features)

Lauzier, Louis Marcel

J 8: 332, **10**: 146 (Magdalen Shallows oceanography); **10**: 155 (Scotian Shelf oceanography); **15**: 1247 (Laurentian Channel water layers)

B 111: 185, 193, 269 (Magdalen Shallows hydrography & oceanography); 195, 213, 251 (Gulf of St. Lawrence oceanography; correction on **J 16**: 386), 287 (Bay of Islands, Nfld., oceanography)

PRA 51: 17, **53**: 5, **58**: 6, **71**: 8, **73**: 11 (Maritimes sea temperatures cycles, trends & extremes)

S 471 (submarine topography oceanographic features); **790** (ICNAF oceanography report)

SS 1161 (NW Atl. sea temperature decreasing); **1248** (use of oceanography to fisheries); **1297** (N Atl. temperatures & salinities re sea-level recording

Laver, green (*Ulva latissima*)

B 127: Fig. 17 (B.C. resource)

Lawler, George Herbert

J 11: 1 (Heming L., Man., trout-perch), 884 (*Triaenophorus* host geographical distribution); **15**: 203 (Heming L. limnology; correction on **16**: 929); **17**: 647 (mutant pike); **18**: 47 (otolith preparation), 283 (Lake Erie whitefish abnormalities), 293 (whitefish egg counts); **20**: 249, 1089 (*Triaenophorus* development), 417 (burbot biology & taxonomy), 1431 (coloured fish tags), 1553 (spring stainless steel anchor tag); **21**: 549 (*Ligula* parasite of Heming L. fish), 651 ("silver" pike hardiness), 1547 (accessory fin on a northern pike)

PRC 1: 31, **2**: 48, 51 (*Triaenophorus* biology, development & control)

S 512 (brook stickleback dorsal spines variations); **783** (Canadian use of trammel nets)

SS 916 (Lake Erie nylon gill nets); **946** (rearing yellow pikeperch fry); **971** (new *Triaenophorus* host); **1221, 1249** (pike–whitefish tapeworm life history & control); **1298** (silver pike)

Lawrie, Andrew Hampton
J 20: 491 (Lake Superior trout intraseasonal growth)
PRC 1: 3, 6, 9, 15, **2**: 25 (Lake Superior sea lamprey control program & operations)

Layer, scattering (*see* Sound-scattering layer)

Lazo, Cape, B.C.
PRP 84: 64 (lingcod winter trawl fishery); **103**: 8 (Pac. cod tagging)

Lea, Einar
SS 180 (Canadian Fisheries Expedition Atl. herring age & growth)

Lea, Helen Elizabeth
J 12: 593 (B.C. chaetognaths distribution)

Lear, Eli
J 13: 843 (Labrador arctic char biology)

Learning
C 7: 465 (of sound reaction by perch)
J 15: 251 (of constant course by salmon fry)

Leather manufacture
J 3: 473, **5**: 217, **10**: 590 (fish organ enzymes for production of bates)
B 59, 89 (uses of marine oils in; *see* their indexes)
PRA 18: 11, **21**: 9 (pyloric caecal enzymes for bate)
PRP 21: 18 (sulphonated fish oils for); **51**: 54, **71**: 5 (pyloric caecal enzyme bate); **63**: 45 (shark skin "leather")

Lebistes reticulatus (*see* Guppy)

Lebius superciliosus (*see* Greenling, rock)

LeBrasseur, Robin John
J 15: 91 (Fraser R. estuary shipworm incidence); **16**: 795 (*Sagitta lyra* as subarctic water biological indicator); **21**: 861 (blue shark stomach contents), 1101 (pink salmon growth rate)
PRP 103: 19, **107**: 3, 5 (plankton distribution in B.C. inlets, NE Pac. & Dixon Entrance); **109**: 9 (NE Pac. steelhead trout distribution, age, feed)
SS 1135 (pollutants storage ground)

Lecithin
B 59, 89 (from marine animal oils; uses; *see* their indexes)
PRP 71: 5, **80**: 47 (from salmon eggs)
S 805 (fatty acid specific distribution)

Lee, Cheuk Yu
S 871 (seawater free amino sugars distribution)

Leeches
C 1911–14(II): 165 (Hirudinea, Georgian Bay, Ont.); **4**: 175 (Jasper Park lakes)
B 56: 17 (Okanagan L., B.C.)

Lee's phenomenon
B 119 (occurrence, causes)

Légaré, Joseph-Eugène Henri
J 14: 521 (Strait of Georgia plankton distribution factors); **15**: 1451, **17**: 933 (Bay of Fundy larval herring; correction on **17**: 943); **17**: 409 (Quoddy plankton re herring feed)
CNG 31 (shrimp prospecting)

Legendre, Rosaire
J 12: 68 (drying lightly salted cod); **15**: 543 (salt fish drying thermocouple control); **18**: 147 (drying Cambodian fish artificially)
PRA 49: 7 (salt cod storage conditions); **56**: 23 (humidity re drying salt cod artificially); **62**: 7 (salt cod splitting table); **71**: 3 (comparison of salt cod products)
SS 1250 (light salting of cod)

Le Have River, N.S.
B 99 (freshets re salmon ascent & population)

Leim, Alexander Henry
C 2: 161 (shad life history & abundance factors); **3**: 457 (fish muscle rigor chemical changes)
J 15: 1259 (Atl. herring fatness); **16**: 503, **17**: 731 (unusual Maritimes fishes: correction on **16**: 930)
B 75 (Maritimes shellfish occasional toxicity); **111**: 1, 17, 35, 177 (Canadian Atl. Herring Investigation), 177 (herring fatness); **155**: (Canadian Atl. coast marine fishes)
PRA 1: 7 (preventing cold storage desiccation), 9 (cod liver oil from frozen livers); **2**: 7 (fillet cold storage changes), 13, **4**: 3, **7**: 13 (courses for fishermen); **4**: 6 (smoking fillets & haddies); **5**: 10 (shipping

frozen fish & shellfish); **15**: 3 (cod & haddock tagging); **19**: 3 ("jellied" swordfish condition); **34**: 17 (herring fatness); **62**: 30 (herring mortality)
S 4 (new & other Atl. shrimp species); **139** (Scotian Shelf oceanography); **587** (Minas Basin & Channel fauna)
SS 295 (squid pursue herring); **381** (unusual N.S. fishes); **557** (Grand L., N.S., water temperatures); **789** (fish biology); **972** (do echo sounders frighten fish?)
J 19: 511 (obituary of)

Length distribution and frequencies (*see also* names of organisms)
J 15: 1451 (Atl. herring larvae); **19**: 1143 (analysis method); **21**: 1051 (Pac. cod), 1101 (pink salmon), 1333 (eulachon)
B 120: 162 (redfish)
PRP 19: 11, **36**: 12, **46**: 20 (trout); **24**: 6, **30**: 3, **41**: 10, **66**: 4 (herring); **24**: 15, **57**: 12 (pilchard); **40**: 17 (eulachon); **59**: 10, **87**: 27, **98**: 17 (flatfishes); **66**: 16 (dogfish); **86**: 18, **91**: 21, **97**: 9 (salmons); **99**: 14 (lingcod)
S 423, 464, 500 (B.C. herring)
SS 1184, 1192, 1211, 1212, 1238, 1254, 1289, 1300, 1325, 1335, 1336, 1361, 1368, 1415 (Atl. groundfishes)

Length–weight relations (*see also* Size; *also* names of organisms)
C 1915–16: 44, **1918–20**: 7, **5**: 73 (Pac. salmons); **1918–20**: 79 (muttonfish); **2**: 245 (shad), 462 (cunner); **6**: 427 (whitefish)
J 2: 318, **10**: 310 (sockeye & coho salmon); **2**: 401 (Atl. herring); **4**: 441 (Atl. salmon), 461, 478 (B.C. herring); **7**: 197 (pike); **8**: 207 (Great Slave L. fishes), 347 (muskellunge); **9**: 1, **13**: 843 (arctic char); **9**: 169 (brook trout); **10**: 416, **13**: 547 (whitefish); **11**: 827 (lake trout); **13**: 507 (affected by diet in pilchards); **14**: 693 (Nfld. squid); **15**: 1269 (Atl. halibut), 1313 (Atl. smelt); **17**: 41 (haddock); **21**: 905 (pink & chum salmon)
B 1: 11 (plaice); **2**: 21 (lumpfish); **25**: 19 (haddock); **81** (Lake Manitoba fishes); **82**: 5 (coregonine fishes); **93**: 6 (seals); **119**: 191 (types of; calculation methods)
S 54 (squirrel hake, pollock; winter flounder, smelt); **250** (rainbow trout)

Lenson, Walter John
PRC 1: 9 (Lake Superior lamprey barriers design & operation)

Lenz, Minnie M.
C 2: 1 (lobster canning bacteriology & chemistry)

Leopardfish (*see* Wolffish, spotted)

LePage, Norman Allen Wolseley
PRP 109: 14 (whale preservation with antibiotics)
CVI 20 (whale preservation with antibiotics)
PRP 112: 6 (obituary of)

Lepeophtheirus (*see* Salmon-lice)

Lepibema chrysops (*see* Bass, white)

Lepidocybium flavobrunneum (*see* Escolar)

Lepidogobius lepidus (*see* Goby, finescale)

Lepidopsetta bilineata (*see* Sole, rock)

Lepisosteus osseus (*see* Gar, longnose)

Lepomis cyanellus (*see* Sunfish, green)

Lepomis gibbosus (*see* Pumpkinseed)

Lepomis macrochirus (*see* Bluegill)

Lepomis megalotis (*see* Sunfish, longear)

Lepomis microlophus (*see* Sunfish, redear)

Leptagonus decagonus (*see* Sea poacher, Atlantic)

Leptoclinus maculatus (*see* Shanny, daubed)

Leptocottus armatus (*see* Sculpin, Pacific staghorn)

Lernaeopoda (parasitic copepods)
J 21: 681 (redescription of *L. centroscyllii*)
S 878 (*L. branchialis* as Atl. cod movement indicator)

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Leroux, Margaret Ruth
J 19: 519 (fish muscle P compounds & free sugars)
S 736 (fish muscle P compounds & free sugars); **772** (sugars oxidation by *Pseudomonas*)

Lesser Slave Lake, Alta.
J 7: 190 (pike); **20**: 1089 (immature *Triaenophorus* measurement)
B 95: 31 (*Triaenophorus*)

Lestidium ringens (*see* Barracudina, slender)

Lethal limits (other than temperature) (*see also* next heading)
C 2: 81 (light, for various marine animals); **3**: 149 (salinity, for *Littorina*, 167 (dehydration, for *Buccinum*); **5**: 109 (salinity, for *Enchelyopus*)
J 2: 485 (salinity & feed, for larval lobster); **4**: 409 (salinity, for Atl. salmon); **5**: 84 (salinity, for starfish); **6**: 63 (sodium nitrite, for mammals), 435 (oxygen, for herring eggs); **8**: 164 (salinity, for Pac. salmon), 479 (tags, for flounders); **12**: 387 (oxygen, for trout; correction on **12**: 942), 917 (oxygen, for various fishes); **13**: 247 (oxygen & salinity, for lobster)
B 5: 8 (light, for lobster)

Lethal limits (temperature) (*see also* Revival)
C 1911–14(I): 73 (mummichog); **2**: 89 (larval lobster), 95 (various marine animals); **3**: 149 (*Littorina*), 167 (whelks); **4**: 397 (lamellibranchs), 495, 501 (skate); **5**: 109 (*Enchelyopus*); **8**: 137 (skate tissue)
J 2: 485 (larval lobster); **5**: 84 (starfish), 485 (Atl. salmon & brook trout); **6**: 476 (stream fishes); **9**: 265 (Pac. salmon); **10**: 196 (B.C. freshwater fishes); **12**: 917 (trout); **13**: 247 (lobster); **15**: 1189 (giant scallop)
B 33: 16 (lobster); **94**: 19 (Alaska blackfish); **120**: 145 (redfish)
PRA 62: 24, **66**: 24 (for holding lobster)
NRB 17: 127 (Atl. capelin)
S 445 (various freshwater fishes); **628** (fishes & lobster; review)
SS 261 (various fishes); **807** (goldfish)

Leucichthys (species not stated) (*see also* Ciscoes; *Coregonus*; Whitefish)
C 1: 430 (N Canada)
J 14: 599 (origin & distribution); **15**: 214 (Heming L., Man.)
B 94: 10 (arctic & subarctic distribution)

Leucichthys laurettae (*see* Herring, river; Whitefish, "humpback")

Leuciscus balteatus (*see* Shiner, redside)

Leuciscus rutilis (*see* Roach)

Leung, Jock
PRP 109: 14 (whale carcasses preservation with antibiotics
CVI 20 (whale preservation with antibiotics)

Leuroglossus stilbius (*see* Smoothtongue)

Lice (*see* Amphipoda; Anoplura; Copepoda, parasitic; Parasites; Salmon-lice; Whale-lice)

Lichens
C 1901: 48 (St. Andrews, N.B.); **1902–05**: 59 (Canso, N.S.)
S 441 (Greenland)

Life
SS 649 (definition & origin)

Life cycle; life history (The following list is not exhaustive; the partial or complete life cycle is in many cases described in publications dealing with other investigations concerning the organisms. *See also* cognate subjects such as Embryology and development; Growth; Larvae; Maturity; Reproduction; *also* names of organisms)
C 1902–05: 95 (Clupeidae); **1911–14 (II)**: 131 (mayflies); **1914–15**: 87 (hake); **1915–16**: 39 (coho salmon); **2**: 161 (shad), 423 (cunner); **3**: 133 (*Littorina*), 247 (Bryozoa); **4**: 265 (haddock), 474 (chinook salmon); **5**: 3, 37, 55, **8**: 345 (sockeye salmon); **6**: 165 (whitefish); **7**: 342 (*Triaenophorus*)
J 1: 1, **12**: 858 (copepods); **1**: 159, **6**: 37 (Atl. salmon); **2**: 41 (lobster), 209 (*Chironomus*), 311 (sockeye); **5**: 176, 471 (brook trout); **6**: 24 (*Lepeophtheirus*), 245 (rainbow trout); **7**: 176 (lake trout); **10**: 85 (*Micronereis*), 539 (*Phocanema decipiens*); **11**: 1 (trout-perch), 326 (Polychaeta); **12**: 35 (Pac. albacore), 238, **21**: 477 (eels); **12**: 287 (naticid whelks), 781

(Brünnich's murre), 797 (Bay of Fundy scallops); **20**: 1001 (redside shiners; correction on **21**: 1553); **20**: 1397 (bigmouth buffalo); **21**: 477 (stages re successive stock & recruitment), 1333 (eulachon)

B 1: 13 (plaice); **2**: 11 (lumpfish); **3**: 9 (angler); **4**: 4 (muttonfish); **17**: 5, **47**: 2 (B.C. herring); **21**: 5 (Atl. salmon); **22**: 15, **60**: 6, **131**: 9 (Atl. oyster); **25**: 13 (haddock); **30**: 9, **62**: 5 (Dungeness crab); **32**: 14, **79**: 3, **84**: 14 (trouts); **45**: 7 (fish tapeworm); **53**: 3, **84**: 6, 8 (Pac. salmons); **54** (lingcod); **55**: 2 (B.C. merganser); **56**: 29 (Okanagan L. fishes); **64**: 3 (smelts); **68, 68R** (B.C. marine fishes); **78**: 17 (*Pontoporeia*), 27 (*Mysis*); **85, 93**: 23, **118, 137** (seals & walrus); **97** (kingfisher); **98**: 10 (beluga); **115** (Atl. bloodworm); **116** (Atl. merganser); **120** (redfish); **130** (swordfish; correction on **J 21**: 1554); **132** (pilot whale); **143** (Pac. herring); **144** (American smelt); **145** (Maritimes scallops); **155** (Canadian Atl. fishes)

PRA 2: 18, **68**: 20, **70**: 16 (Atl. salmon); **35**: 3 (soft-shell clam); **63**: 3 (green crab)

PRP 4: 9 (shrimps); **5**: 3, **21**: 7, **54**: 12 (shipworm); **6**: 9 (clams); **11**: 18 (Dungeness crab); **29**: 16, **51**: 3, 8 (coho salmon); **33**: 3 (pink salmon); **40**: 17 (eulachon); **43**: 8 (Pac. oyster); **75**: 57 (hagfish)

NRB 1: 33, **13** (Atl. salmon); **2, 17** (capelin); **7** (lobster); **15** (spiny dogfish)

NSB 8 (Nfld. fishes); **15** (lobster)

S 45 (*Teredo navalis*); **50** (Entomostraca); **77, 90, 91, 92, 107, 113, 115, 118, 122, 134, 145, 179, 195, 219, 233, 328, 342, 362, 396, 422, 465, 501** (sockeye salmon: a series, No. 11–25, 36–42); **133** (B.C. crabs); **164** (lobster); **188** (Atl. salmon); **194** (pilchard); **202** (parasites); **287** (B.C. salmon); **599** (*Phocanema decipiens*); **646** (Steller sea lion); **762** (arctic *Sagitta elegans*); **765** (ringed & bearded seals)

SS 59 (mayflies); **71** (Pac. salmons); **92, 114, 130, 152, 167, 197, 228, 248, 264, 279, 730** (sockeye: No. 1–10, 26–35 of above series); **121, 138, 983** (Dungeness crab); **132** (myxosporidian); **330** (Pac. dogfish); **488** (pilchard); **540, 773** (Pac. salmons freshwater phases); **649** (Atl. salmon); **714** (river snails); **1230** (American eel)

Light (*see* following two headings, *also* other cognate subjects, e.g. Illumination; Irradiation; Photosynthesis; Sunburn)

Light, penetration of (*see also* Algae; Heat budget; Illumination; Limnology; Oceanography; Photosynthesis; Transparency; Turbidity)

C 7: 73 (pure & seawater spectral absorption)

J 15: 453 (re oceanography, zooplankton & fishes); **17**: 871 (effect on algal growth)

S 27 (photometry); **43** (in a lake); **673** (attenuator for plankton studies); **778** (thermopile radiometer for measuring attenuation)

Light, reactions to (*see also* Eye; Illumination; Photoperiodism; Photosynthesis; *also* names of individual organisms)

C 1914–15: 115 (eels); **2**: 81 (marine animals); **3**: 154 (*Littorina*); **4**: 123 (Atl. mussel); **5**: 83 (*Calanus*), 201 (parasitic aquatic fungus)

J 1: 319, **10**: 253, **21**: 139, 159 (phytoplankton); **2**: 485 (lobster); **4**: 323, **5**: 485, **6**: 90, **7**: 432, **20**: 1245 (Atl. salmon; corrections on **21**: 1553); **4**: 349, 392, **17**: 135, 699 (Atl. herring); **5**: 365 (copepods); **6**: 10 (bacteria), 90, **10**: 548, **15**: 1403, **20**: 859, **21**: 133 (trouts); **6**: 158, 217, **8**: 241, **10**: 548, **11**: 69, **12**: 369, **13**: 309, **14**: 815, **15**: 391, **17**: 655, **20**: 287 (Pac. salmons); **6**: 425 (*Themisto*); **7**: 363 (*Odontosyllis*); **7**: 432, **12**: 238 (eels); **8**: 134 (amphipods); **11**: 529 (effect on athiaminosis); **12**: 178 (effect of pineal injury), 270 (oyster larvae when spatting); **15**: 464 (re vision stimulation of fish & zooplankton), 815 (salmon eye); **17**: 517 (*Mysis* movements); **21**: 291 (*Daphnia* vertical movement rate), 591 (teleost retinomotor cycles & behaviour), 613 (re avoidance of nets by carp, etc.), 1089 chorioidal tapeta reflectivity), 1453 (*Astyanax mexicanus*)

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B 5: 8 (lobster larvae); **62:** 14 (crab); **99** (Atl. salmon); **117** (Pac. salmon fingerlings)

PRA 45: 6 (re Atl. oyster growth, shell, & growths on shell)

PRP 26: 3 (trout culturing in white vs. black ponds); **37:** 3 (adult Pac. herring); **73:** 65 (Pac. herring larvae); **92:** 14, **95:** 53 (migrating Pac. salmon); **107:** 3 (zooplankters)

S 8 (narcotized animals); **29** (wavelength re algae reproduction rate); **40** (marine animals); **44** (marine woodborers); **50** (Entomostraca); **79, 104, 111** (marine organisms); **164** (lobster laying eggs); **215** (rainbow trout re full moon); **281** (common sucker)

SS 215 (mussel growth); **235** (hermit crab vision acuity); **499** (trout when on spawning migration); **652** (copepod vertical movement)

Lighthouse and lightship oceanographic stations, B.C. coast (*see also* Oceanography, Pacific (NE coastal waters); *also* names of individual stations)

J 10: 126 (surface temperature & salinity seasonal variations)

PRP 26: 5, **31:** 16, **81:** 75, **86:** 6, **90:** 16, **91:** 3, **92:** 6, **94:** 8, **95:** 51, **98:** 6 (descriptions, illustrations, data collected, results)

CPO (*see* titles pertaining to daily coastal seawater data in this Circular series)

S 473 (classification of daily seawater data)

SS 1156 (daily seawater observation program)

Lighthouse and lightship oceanographic stations, Canadian Atlantic coast (*see also* Oceanography, Atlantic (NW coastal waters))

J 4: 378 (for surface sea temperatures)

PRA 42: 4, **51:** 17, **53:** 5, **58:** 6, **71:** 8 (collection of surface sea temperatures)

S 358 (wind & storm effects on waters near Sambro)

Lignin

J 14: 50 (in soils, lake sediments, plankton; correction on **14:** 997)

Ligula intestinalis (a cestode)

J 21: 549 (in Heming L., Man., fish)

Limanda aspera (*see* Sole, yellowfin)

Limanda ferruginea (*see* Flounder, yellowtail)

Limeburner Lake, N.B.

PRA 36: 6 (trout angling yields)

Limnology (*see also* Fauna, freshwater invertebrate; Flora, freshwater; *also* names of freshwater bodies of water)

C 1: 127 (Quill lakes, Sask.); **2:** 345 (Cultus L., B.C.); **5:** 381 (Man. lakes); **6:** 185 (Bay of Quinte, Ont.)

J 1: 67 (fertilized ponds); **2:** 227 (Prince Albert lakes, Sask.); **3:** 363 (Cultus L., B.C.); **5:** 138 (ponds at St. Andrews, N.B.); **6:** 217 (McClinton Creek, B.C.); **7:** 22 (Tedford L., N.S.); **8:** 1, **13:** 78, 113 (Great Slave L., N.W.T.); **8:** 82 (Lakelse L., B.C.), 383 (Charlotte Co. lakes, N.B.); **9:** 325, 329, **13:** 1, **18:** 617 (Great Lakes); **9:** 417 (Cowichan L., B.C.); **11:** 624 (Port John L., B.C.); **12:** 210 (2 N.B. trout lakes), 238 (lakes containing eels), 487 (Chubb Crater, Que.), 499 (Skeena basin lakes, B.C.), 618 (Copper L., N.S.); **13:** 515 (B.C. lakes); **14:** 33 (chemical constituents in seston); (dissolved organic substances in water), 573, **21:** 1325 (Kootenay L., B.C.); **15:** 203 (Heming L., Man.; correction on **16:** 929); **15:** 607 (Ont. lakes & Norris reservoir), 867 (Owikeno L., B.C.), 1403 (Ellerslie Brook, P.E.I.); **16:** 131 (Lake Winnipeg in winter), 830 (Miramichi R., N.B.), 835 (Hooknose Creek, B.C.; correction on **17:** 943): **16:** 887 (Ellerslie Brook dissolved phosphates; correction on **17:** 943); **16:** 923 (depth of lakes), 930 (water conductivity measurement; correction on **16:** 930); **17:** 677 (Crecy L., N.B.); **18:** 463 (Boar's Back L., N.S.); **19:** 1105 (Greiner L., Canadian Arctic); **21:** 291 (Lake Mendota, Wisconsin, *Daphnia* movement), 1321 (seawater in Sakinaw L., B.C.)

B 42: 5 (Paul L., B.C.), 22 (Pinantan L., B.C.), 25 (Penask L., B.C.), 27 (Fish L., B.C.), 28 (Nicola L., B.C.); **56:** 8 (Okanagan lakes, B.C.); **57:** 42 (Margaree R., N.S.); **72:** 35 (N.W.T. lakes); **78** (Great Bear & Great Slave L., N.W.T.); **82** (Great Bear L.); **84:** 5 (Cowichan R., B.C.): **94** (Canadian Arctic)

PRA 4: 14 (oxygen in fertilized ponds); **43**: 3 (Crecy L., N.B.); **47**: 3 (re rock formations of lakes)
PRP 8: 6 (Skeena R.); **65**: 70 (Quamichan L., Vancouver Is., re sudden fish mortality); **66**: 12, **67**: 23, **68**: 55, **69**: 70, **70**: 10, **72**: 28, **74**: 6, 9, **78**: 6 (Skeena R. drainage system lakes)
CSG 38 (NW Miramichi R., N.B.)
S 37 (lakes productivity); **43** (light penetration, Chamcook L., N.B.); **50** (entomostracan ecology); **67** (Fraser R.); **125** (re oxygen saturation); **138, 198** (Lake Jesse, N.S.); **163** (Jones L., B.C.); **170, 228** (Lost Lagoon, Vancouver, B.C.); **197** (Shuswap L., B.C.); **200** (Cultus L., B.C.); **206** (N.S. lakes); **217** (temperature characteristic re ecology); **224** (Swan L., B.C.); **237** (kokanee & salmon waters); **239** (Potter's L., N.B.); **257** (B.C. pink salmon streams); **270** (Ont. salmon streams); **278** (ponds in P.E.I. park); **297** (Crecy L., N.B.); **815** (low phosphate concentrations); **841** (Canadian Atl. provinces)
SS 18 (re protoplasm paleochemistry); **507** (Ont. streams re ecology); **557** (Grand L., N.S.); **1313** (ancient seawater in Powell L., B.C.); **1371** (W Canada)

Limnoria lignorum (*see* Gribble)

Limpets
S 245 (description of B.C. edible *Acmea*)

Lindahl, Per Eric
J 15: 685 (attraction of trinitrophenol for roaches)

Lindsay, Sheila Taylor
NRB 1 (Nfld. salmon biology)

Lindsey, Casimir Charles
J 13: 759 (Mackenzie R. drainage system fishes distribution & taxonomy); **14**: 651 (water diversion effects on fish distribution, B.C.); **16**: 695 (B.C. rainbow trout homing); **19**: 173 (rainbow trout spawning runs), 687 (*Coregonus nasus* & other whitefishes); **20**: 749 (sympatric occurrence of 2 humpback whitefish species); 1001 (redside shiners life history; correction on **21**: 1553); **21**: 977 (lake trout zoogeography)
SS 1208 (B.C. freshwater fishes)

Ling (*Lota*) (*see Burbot*)

Ling (*Urophycis*) (*see* Hake (Atlantic); Hake, spotted)

Ling, blue (*Molva byrkelange*)
J 19: 891 (Nfld. record)
B 155: 211 (full description)

Ling, European (*Molva molva*)
J 11: 11 (first NW Atl. record)
B 155: 211 (full description)

Lingcod (biology) (*Ophiodon elongatus*) (blue cod; green cod)
C 1: 285 (feed & spawning)
J 15: 831 (mortality rates; yields; correction on **16**: 386); **19**: 515 (trichodinids as gill parasites); **20**: 45, 187, 1145 (rigor & biochemistry of muscle tissues)
B 54 (B.C. fishery); **68**: 237, **68R**: 248 (full description); **139** (role in Strait of Georgia trawl fishery)
PRP 23: 4 (fecundity); **42**: 20, **44**: 14, **56**: 10, **57**: 3, **67**: 31, **100**: 19, **105**: 22, **107**: 19 (tagging & returns); **44**: 14, **56**: 10, **99**: 14, **100**: 19, **105**: 22 (growth; growth rate; age); **86**: 64 (winter trawl fishery); **111**: 3 (effect of explosion on)
CNG 33, 41 (winter catches, 1953–55); **64**: 48 (productive capacity)
CNS 1–11, 13 (B.C. trawl catches by areas, 1945–63)
S 22 (flesh pentoses function); **59** (blood sugar); **68** (liver asphyxial hyperglycaemia); **81** (muscle creatine); **82** (arginine in organs); **453** (B.C. fishery); **494, 526, 534, 568, 570, 640** (muscle phosphorus compounds enzymes); **569** (muscle lipase activity); **695, 696** (muscle myogens separation); **708** (plasma steroid hormones); **752** (mortality from diatom spines in gills); **851**: 45 (B.C. fishery & prospects)
SS 127 (spawning; embryology)

Lingcod (products)
C 7: 405 (liver oil vitamin A)
J 2: 461 (flesh & skin composition); **4**: 472 (liver & intestine oils vitamins A & D); **5**: 158 (fillet preservation); **6**: 305 (dehydrated flesh); **7**: 35 (flesh protein

nutritive value), 51 (flesh sulphur proteins), 74 (flesh B-vitamins), 552 (bacteriological peptones from flesh); **8**: 74 (Maillard browning of flesh); **10**: 69 (flesh quality preservation); **16**: 755 (fillet lipase activity); **17**: 371 (flesh phosphorus compounds), 603 (flesh free ribose); **18**: 377 (liver oil hypocholesterolemic activity); **19**: 169 (frozen fillet fat hydrolysis), 615 (antibiotics effect on quality tests), 733 (frozen storage phospholipid changes); **21**: 37 (storage in ultraviolet irradiated brines)

B 37: 148 (liver oil); **54**: 23 (flesh; oils); **59, 89** (vitamin oils; *see* their indexes); **126**: 29 (changes in refrigerated seawater)

PRP 12: 3, **22**: 8, **36**: 22, **48**: 9, **50**: 4, **82**: 20 (liver & viscera oils & vitamin A); **19**: 20, **53**: 9, **57**: 11, **105**: 19 (composition & nutritive value); **37**: 7, **65**: 73 (smoked); **38**: 3, **67**: 36, **93**: 23, **96**: 11, 25, **110**: 16, **112**: 15 (flesh quality protection); **47**: 12 (liver oil vitamin D); **56**: 7, **57**: 16 (dehydrated); **65**: 67 (liver oil unsaponifiables); **73**: 58 (bonemeal from scrap); **76**: 85 (true freezing point of flesh); **81**: 80 (fish & fillets mechanical washing); **92**: 23, **98**: 3 (flesh ribose re flesh browning); **99**: 22 (mould inhibitors for salted); **112**: 15 (holding in refrigerated seawater)

CVI 7 (fish loaf); **11** (flesh myosin essential amino acids); **17** (B vitamins & amino acids)

S 375 (antibiotic preservation of flesh quality); **434** (flesh Na & K content); **494, 526, 534, 568, 570** (muscle nucleic acids); **569** (muscle lipase); **593, 613, 617** (liver oil anti-hypercholesterolemic activity); **606** (muscle phosphomonoesterases); **607** (muscle phosphorylribose enzyme); **725** (muscle cold storage changes)

SS 299 (important food fish)

Link relatives
PRP 77: 91 (for computing relative availabilities of a fish)

Linton, Everett Percival
J 3: 1 (preparing fillets for smoking); **6**: 338 (smoke deposition factors), 380 (drying heavily salted fish)
PRA 12: 7, 10; **13**: 3, 5 (drying & smoking fillets); **34**: 10 (tunnel-type smokehouse); **35**: 26 (salt-fish dryer); **36**: 19 (smoked fillets keepability)
CHO 29 (tunnel smokehouse)
S 135 (hot-wire anemometers for smoke velocity); **812** (cross-ventilated tunnel smokehouse)

Liopsetta glacialis (*see* Flounder, arctic)

Liopsetta putnami (*see* Flounder, smooth)

Liparid, abyssal (*see* Snailfish, abyssal)

Liparid, black-tailed (*see* Snailfish, blacktail)

Liparid, continuous-finned (*see* Snailfish, shorttail)

Liparid, Denny's (*see* Snailfish, marbled)

Liparid, Green's (*see* Snailfish, lobefin)

Liparid, Gunther's (*see* Snailfish, ribbon)

Liparid, Juan de Fuca (*see* Snailfish, slipskin)

Liparid, Pallas's (*see* Snailfish, spotted)

Liparid, prickly (*see* Snailfish, prickly)

Liparid, ring-tailed (*see* Snailfish, ringtail)

Liparid, shore (*see* Snailfish, tidepool)

Liparid, small-disked (*see* Snailfish, smalldisk)

Liparid, tadpole (*see* Snailfish, tadpole)

Liparis atlanticus (*see* Seasnail, Atlantic)

Liparis callyodon (*see* Snailfish, spotted)

Liparis cyclopus (*see* Snailfish, ribbon)

Liparis cyclostigma (*see* Seasnail, polkadot)

Liparis dennyi (*see* Snailfish, marbled)

Liparis fabricii (a liparid)
J 11: 249 (Strait of Belle Isle, as *L. major*)
B 73: 7 (young, Labrador & Baffin Is.)

Liparis florae (*see* Snailfish, tidepool)

Liparis fucensis (*see* Snailfish, slipskin)

Liparis koefoedi (*see* Seasnail, gelatinous)

Liparis liparis (*see* Seasnail, striped)

Liparis major (*see Liparis fabricii*)

Liparis pulchellus (*see* Snailfish, shorttail)

Liparis rutteri (*see* Snailfish, ringtail)

Liparis tunicatus (*see* Seasnail, Greenland)

Lipase (*see also* Acids, fatty; Enzymes; Lipids; Lipoxidase; Oils and fats)
J 13: 129 (in plaice fillets), 569 (redfish fillets); **16:** 43 (Atl. cod), 755 (lingcod flesh)
PRA 66: 16 (re Atl. cod salting)
PRP 45: 21 (effect on fish oils)
B 59, 89 (re marine animal oils; *see* their indexes)
S 569 (lingcod muscle)

Lipids (*see also* Oils and fats) (Many early publications made little distinction between oils, fats and lipids; references to these will be found chiefly under Oils and fats and the other headings mentioned thereunder; *see also* Acids, fatty; Composition, chemical; Cholesterol; Lipase; Lipoxidase; Phospholipids; Sterols)
J 16: 43, **18:** 143, **19:** 169, **21:** 101, 539 (hydrolysis in fresh or frozen muscle or fillets); **16:** 63 (analysis for, in cod muscle extractives); **16:** 235, **17:** 113 (re spawning migratory sockeye salmon; correction on **17:** 943); **17:** 323 (re maturing coho salmon), 371 (lingcod muscle phospholipids), 565 (maturing sockeye tissues phospholipids), 903, **18:** 377 (effects on blood cholesterol levels); **18:** 483, 495, 893 (content in various fishes), 653 (utilization by sockeye); **20:** 909 (distribution & variation in cod fillets); **21:** 247 (structural homogeneity in fatty acids of marine), 653 (utilization by sockeye), 703 (seasonal variations in cod muscle), 1035 (seasonal variations in scallop muscle), 1345, 1361, 1371 (re rancidity), 1379 (fatty acid distribution in plankton)
B 59, 89 (marine animal oils; *see* their indexes); **125:** 129 (determination in marine organic particulate matter)
PRP 89: 79, **108:** 24 (effect on chick feeding value of herring meal)
CVI 25 (nutritional changes in stored herring meal)
S 577 (determination method for total); **593, 641** (re chick metabolism of cholesterol); **626** (re biochemical changes in maturing fishes); **682, 816** (phytoplankton); **700, 832** (utilization by rainbow trout & sockeye salmon); **704** (changes in herring meal); **805** (cod, lobster & scallop: fatty acid distribution); **819** (marine fish & mammal depot fats); **864** (animal retention of dietary triglyceride fatty acid pattern)

Lipogenys gilli (*see* Tapirfish, backfin)

Lipoxidase (*see also* Enzymes; Rancidity)
J 7: 137 (role in rancidity); **9:** 393 (in B.C. herring flesh)
B 59: 195, **89:** 170 (action on fish oils)
PRP 50: 4 (re vitamin A recovery from oils)
CVI 6 (action on vitamin A)
S 424 (action in frozen fish)

Lippa, Erich Johannes Richard
CNS 11, 13 (B.C. trawled groundfish landings, 1962–63)

Liquefaction of tissues (*see* Ensilage; Hydrolysate; Solubles, condensed; Stickwater)

Liquor, free aqueous in canned products (*see* Juice)

Lisac, Hinko
S 455 (frozen vs. unfrozen sardines for canning)

Lisk, Robert D.
SS 1299 (estradiol-17 in lobster eggs)

Lissodelphis borealis (*see* Dolphin, right whale)

Lists of organisms (*see* Distribution; Fauna; Fishes, lists of; Flora; Insects)

Lists of publications (*see* Publications, lists of)

Lithodes aequispina (a crab)
J 19: 401 (first B.C. record)

Little Codroy River, Nfld.
PRA 68: 20, **70**: 16 (salmon biology, survival & utilization)
S 541 (electrofishing for salmon)

Littorina (*see* Periwinkles)

Liver (*see also* Oils and fats: fish liver; Oils and fats: marine mammalian; Vitamin A; Vitamin D; Vitamins A + D)
J 7: 563 (amino acids); **9**: 129 (vitamin B_{12}); **11**: 355 (nutritive value & vitamin B_{12}); **12**: 637 (extracts; enzymic hydrolysates; minerals; vitamins); **15**: 525 (liverburn in haddock); **16**: 421 (nucleic acids of salmon); **17**: 113 (cholesterol, etc. of salmon; corrections on **17**: 943, 944), 323 (proximate composition of coho salmon), 347 (histidine in sockeye salmon), 565 (creatine, inositol, etc. in sockeye), 913 (collagen content of Pac. herring); **18**: 85 (meal, source of dietary protein), 349 (nucleoside phosphorylase from salmon); **19**: 679 (tissue explant culture); **21**: 653 (fatty acid oxidation by tissue of salmon)
B 59, 89 (amount in fish; preservation; oil separation, etc.; *see* their indexes)
PRA 27: 7 (canning cod); **29**: 17 (oil content in swordfish & tuna); **37**: 9 (analysis & vitamin A of seal); **48**: 4 (canning paste from cod), 4, **49**: 5, **54**: 3 (meal from cod); **54**: 3 (vitamin B_{12} content of cod); **68**: 17 (preservation of)
PRP 16: 7, **80**: 47 (yield from salmon); **16**: 7, **26**: 17, **68**: 43, **69**: 74, **71**: 12, **72**: 41 (flatfishes); **22**: 8, **33**: 7, **44**: 4, **45**: 21, **50**: 4, 10, **54**: 4, **58**: 3 (processing for oil); **23**: 14 (beef, for hatchery feed); **26**: 17, **36**: 22, **38**: 15 (yield from cods); **26**: 17 (yield from perch); **31**: 3, **33**: 8, **34**: 3, **58**: 3, **73**: 57 (yield from dogfish); **33**: 8 (yield from pilchard, herring & halibut); **35**: 12, **55**: 9, **58**: 3, **61**: 16 (yield from sharks other than dogfish); **36**: 7, **50**: 4 (preservation); **36**: 10 (yield from hair seal & sea lion); **48**: 9, **58**: 3, **77**: 91, **82**: 20, **84**: 64, **88**: 51 (amounts landed & value to fishermen); **50**: 4 (vitamin A in different sections of dogfish); **63**: 8 (canned paste from salmon); **75**: 48 (yield from whitefish); **80**: 47 (recovery from salmon cannery waste); **80**: 52 (growth factor in salmon, as hatchery feed); **83**: 28 (meal from whale)
CCG 5: 1 (proximate composition of burbot)
CFI 9 (canning of Atl. cod)
CGR 8 (new oil extraction process for cod)
CNS 4, 5, 8, 11 (landings by B.C. trawlers)
CVI 8 (weight of in various flatfishes); **9, 12, 13** (proportion of in freshwater fishes); **10** (oil content, vitamin A content & uses, of whale); **11** (essential amino acids in hydrolysate); **16** (by-products from Pac. salmon); **17** (amino acids of rockfish)
S 607 (phosphorylribose enzyme in lingcod); **677** (paste, from Atl. fishes); **805** (lipid fatty acids specific distribution in Atl. cod); **819** (fatty acid distribution in various animals); **866** (glycolytic enzyme in trout)
SS 685 (vitamin A determination in); **738** (re Atl. salmon embryology)
Patent—Canada No. 484,092 (treatment of)

Liver oil (*see* Oils and fats: fish liver; Oils and fats: marine mammalian; Vitamin A; Vitamin D; Vitamins A + D)

Livestock feed (*see* Feedstuffs; Poultry feed; Ruminant livestock feed)

Livingstone, Daniel Archibald
J 12: 618 (improving conditions for N.S. lake trout population)

Loaf, fish (*see also* Delicatessen)
CCG 4: 10 (from whitefish & freshwater smelt)
CVI 7 (from lingcod)

Lobosa (protozoa)
C 7: 213 (new B.C. species)
PF 1a (description of B.C.)

Lobster (biology) (*Homarus americanus*) (*see also* Traps)
C 1902–05: 28 (dynamite explosion effect on); **1906–10**: 277 (intestine physiology); **1914–15**: 41 (N.S. sanctuaries & mating ponds), 119 (possible B.C. planting areas); **1915–16**: 11 (diatoms re feed); **1917–18**: 53 (N.S. investigations); **1918–20**: 185 (claw flexor tendon histology); **2**: 83 (sunlight lethal effect), 95 (larvae resistance to temperature extremes); **3**: 310 (biological study of fishery statistics); **8**: 421 (mating)

J 1: 213, **2**: 41 (local differences in body proportions & life history); **1**: 269 (Gulf of St. Lawrence tagging); **2**: 223 (mating), 349 (larval stages), 485 (larvae growth factors); **3**: 339, **5**: 71 (egg-laying; hatching postures; embryo development rates); **3**: 343 (larvae habits & distribution), 358 (chitinovorus bacteria shell disease); **6**: 152 (phosphorus re moult cycle), 228 (sexual dimorphism); 281 (abdominal width re female sexual maturity), 291, **15**: 1345; **20**: 59 (activity; catchability; population size); **8**: 486 (toxicity of certain metals to); **10**: 371, **20**: 305 (movement; growth rate; survival); **11**: 253 (Belle Isle Strait); **13**: 247 (survival re physical environment); **14**: 729 (bird predation on larvae); **15**: 625 (landings re temperature & fishery), 1138 (investigations review); **17**: 553 (as affected by possible power dam structures), 895, **18**: 285 (biosynthesis of trimethylamine oxide & betaine; correction on **21**: 1553); **18**: 367 (inactivating claws); **19**: 505 (choline metabolism); **21**: 661 (Northumberland Strait abundance & distribution), 1549 (tolerance for tank-wood extractives & water fluoride)

B 5 (natural breeding); **43** (experimental introduction to B.C.); **147** (storage & shipment of live)

AF 10m: 23 (description)

PRA 5: 5 (bait for); **6**: 5 (spawning); **6**: 5, **41**: 14, **64**: 23 (growth); **6**: 10 (handling & live shipping); **19**: 10 (chitinivorus bacteria on shell); **22**: 9, **30**: 7 (size); **24**: 16 (free-swimming stages); **25**: 10 (size limit); **28**: 7, **30**: 7, **37**: 10 (fishing intensity); **30**: 5 (life history); **34**: 22, **69**: 22 (trap design & lath spacing); **60**: 14, **69**: 16 (eaten by sand fleas); **62**: 24, **66**: 24 (holding); **69**: 12 (movements)

PRP 72: 43, **74**: 13, **90**: 8 (experimental introduction to B.C.)

CHO 2 (biology); **3, 4** (handling & care before canning)

CHN 9 (Gaffkaemia disease); **17** (tolerance to tank-wood extractives & water fluoride)

CNG 64: 23 (productive capacity)

CSG 21 (holding in artificial seawater); **24** (Gulf of St. Lawrence fishery)

NRB 7 (life history); **8** (Nfld. tagging); **10** (washing of berried); **11** (Nfld. fishery); **16** (Nfld. investigations); **18** (abnormalities; inactivating claws; growth; moulting)

NSB 2 (Nfld. industry); **15** (life history)

S 164 (biology & fishery); **453, 851**: 70 (possible adaptability to B.C.); **528** (fishery regulation); **681** (banding claws); **805** (lipid fatty acids specific distribution); **864** (retention of dietary fatty acids distribution)

SS 39 (anal muscle rhythmic contractility); **77** (albino); **131** (mating re conservation); **147, 156, 173, 238, 285, 1139, 1400** (conservation); **162** (ganglion cytology); **841** (attempted introduction into B.C.); **1056, 1187** (trap experiments); **1125** (holding alive); **1170** (25 years of tagging studies); **1171** (fishery); **1172, 1379** (migration is limited); **1299** (hormone in eggs)

Lobster (products)

C 1921: 125 (muscle composition); **2**: 1 (canning: bacteriology & chemistry); **4**: 227 (muscle autolysis & bacterial decomposition); **5**: 93 (cause of dry meat in canned); **8**: 227 (effect on dog gastric secretion)

J 1: 179 (muscle non-protein N compounds); **3**: 102 (thermal canning data for sterility); **6**: 183 (crystals in canned); **7**: 70 (salt effect on *Clostridium* growth in), 96 (thiaminase content); **10**: 521 (chitosans preparation & properties); **12**: 85 (landings re price & cost of living); **14**: 637 (frozen meat discoloration; fat deterioration); **17**: 895, **18**: 285, **19**: 505 (trimethylamine origin during spoilage)

B 6 (standard canning pickle); **8** (discoloration of canned); **10** (paste); **33** (shipping alive)

PRA 5: 10 (shipping frozen meat); **6**: 10 (handling & shipping alive); **8**: 10 (as digestive stimulator for man); **9**: 10 (storage temperature for canned); **13**: 5 (cannery grading); **21**: 4 (canning "wet pack" style); **44**: 3 (possible toxicity from

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series*: **CAG**—Montreal, **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St John's; **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews, **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

unsanitary handling); **57**: 6 (glucosamine from shell)
CFI 19 (all aspects of canning); **21** (paste)
CHO 1, 2, 4, 5, 33 (canning: general); **6** (cooking before canning); **7** (shelling & washing meat before canning); **8, 17** (filling cans); **9** (exhausting cans); **10** (sealing cans); **11** (processing cans); **12, 16** (cannery sanitation); **13** ("tomalley"); **14** (inspection & storage of cans); **15** (spoilage after canning); **18** (shell in canned); **19** (weight of meats in canned); **20** (brine or pickle); **21** (chilling meat); **22** (embossing can lids); **23** (soft meat in product); **24** (glass-like crystals in canned)
CHN 2 (yellow discoloration of frozen meat)
MSP 4 (glass-like crystals in canned)
NRB 10 ("washing" of berried); **18** (inactivating claws for holding)
NSB 2 (Nfld. industry)
SS 249 (blackening of canned); **258** (grading cannery sanitation); **270** (canning report); **314, 592** (paste); **471** (effect on gastric juice secretion); **534, 548** (canned); **549** (Pictou, N.S., festival); **1125** (holding alive); **1194** (air transport of live)

Lobster, spiny (*Panulirus* and *Jasus* species)
S 453: 56, **851**: 71 (possible adaptability to B.C.)

Lockeport, N.S.
PRA 58: 17 (longlining bait tests); **64**: 10 (cod & haddock tagging)

Lockhart, Ernest Earle
J 10: 590 (redfish pyloric caeca enzyme activity)

Logan, John Fremont
C 6: 1 (halibut muscle soluble proteins)

Logfish (*see* Barrelfish, American)

Logie, Robert Reed
PRA 65: 3 (Atl. oyster mortalities)
CSG 6 (green-gilled oysters); **27** (old & new oyster mortalities); **28, 29, 31** (rehabilitation of oyster fisheries after oyster disease)
S 283 (P.E.I. oyster disease mortalities); **678** (disease-depleted oyster populations rehabilitation)
SS 1177 (large-scale Atl. oyster transfer); **1222** (E Canada oyster farming)

Logier, E. B. S.
SS 567 (ribbed toad)

Logperch (*Percina caprodes*)
C 1911–14(II): 47 (Lake Huron)
J 16: 147 (associations in Ont. streams)
S 357 (Lake Winnipeg region); **481** (Man.)

Loligo (*see* Squids)

Longlining; trawl lining; set lining
J 17: 33 (estimating fish abundance from)
B 1: 9 (for plaice); **3**: 8 (for angler); **4**: 10 (for muttonfish); **25**: 22, **69**: 8 (for haddock); **54**: 15 (for lingcod); **61**: 3 (for offshore Atl. cod); **71**: 6 (for Atl. halibut); **109** (off Nfld.); **141** (for cod off Nfld. & S. Labrador)
PRA 63: 19, **68**: 9 (Nfld. commercial experiments)
PRP 34: 16 (for Pac. sharks)
CJG 1, 2, 3, 4, 5, 6, 7 (Nfld. experiments & landings, 1953–59)
CSG 5 (improves fishing efficiency)
S 630 (re radioactive wastes disposal at sea)
SS 900, 933 (vs. otter trawling for Atl. groundfish); **1057** (from powered dories)

Lookdown, Atlantic (*Selene vomer*) (horsehead; moonfish)
B 155: 251 (full description)

Loon Lake, B.C.
J 16: 695 (trout homing); **19**: 173 (rainbow trout spawning runs), 201 (rainbow trout migratory behaviour)

Loosejaw (Atlantic) (*Malacosteus niger*)
B 155: 137 (full description)

Loosejaw (Pacific) (*Aristostomias scintillans*)
B 68R: 137 (full description)

Lophius americanus (*see* Monkfish)

Lopholatilus chamaeleonticeps (*see* Tilefish)

Lophopsetta aquosa (*see* Windowpane)

Lophopsetta maculata (*see* Windowpane)

Lord, Esther Irene
PRA 63: 3 (green crab as clam predator)

Lord, Irish (*see* Irish lord)

Lost Lagoon, Vancouver, B.C.
S 170, 228 (ecology of brackish water)

Lota lota, L. maculosa (*see* Burbot)

Loucks, Ronald Harold
CPO 1964-1 (slicks on Juan de Fuca Strait surface water); **1964-2** (ocean current assessment between Juan de Fuca Strait & ocean weathership); **1964-4** (calculating running means for data)

Loudon, W. J.
SS 36 (smallmouth bass); **271** (Georgian Bay Biological Station work)

Loudoun Channel, B.C.
PRP 84: 70 (tidal currents)

Louse (*see* subjects listed after heading Lice)

Lowe, Charles William
C 1918–20: 124 (Lake Winnipeg diatoms)
J 3: 12 (Pac. diatoms as copepod & fish feed)

Lower, A. R. M.
SS 117 (W coast James Bay fish & fisheries)

Lubinsky, Irene
S 545 (Hudson & Ungava Bays *Mytilus edulis*)

Lubricants from marine animal oils (*see also* Bodying)
B 59, 89 (various; *see* their indexes)
PRP 14: 14 (porpoise jaw oil); **21:** 18, **25:** 13 (pilchard oil); **51:** 19, **71:** 5 (ratfish liver oil)
CHN 7 (from blown cod liver oil)

Lucas, Colin Campbell
S 56, 83 (Fraser R. estuarial region oceanography); **112** (Strait of Georgia oceanography re phytoplankton)
SS 326 (picric acid colorimetric standard for seawater silicate determination); **340, 378, 379** (Strait of Georgia oceanography re phytoplankton)

Lucas, Verna Zora (*see also* Smith, Verna Zora)
C 6: 397 (Vancouver Is. Ostracoda)

Luminescence (*see also* Lanternfish species; Protozoa)
SS 78 (pearlsides); **125** (worms, crustaceans, insects)

Lump (*see* Lumpfish)

Lumpenella longirostris (*see* Prickleback, longsnout)

Lumpenus anguillaris (*see* Prickleback, snake)

Lumpenus fabricii (*see* Eelblenny, slender)

Lumpenus lumpretaeformis (*see* Blenny, snake)

Lumpenus maculatus (*see* Shanny, daubed)

Lumpenus medius (*see* Eelblenny, stout)

Lumpenus sagitta (*see* Prickleback, snake)

Lumpfish (*Cyclopterus lumpus*) (henfish; lump; lumpsucker)
C 1902–05: 87 (N.S.); **1:** 1 (study of); **2:** 119 (insulin in); **8:** 32 (Hudson Bay)
J 7: 96 (thiaminase in); **16:** 826, **17:** 732 (records off Maritimes)
B 2 (description & fishery); **155:** 368 (full description)
MSP 1 (as new foodfish)
S 226 (off St. Andrews, N.B.); **587** (Minas Basin, N.S.)

Lumpsucker (*see* following entries; *also* Lumpfish)

Lumpsucker, Atlantic spiny (*Eumicrotremus spinosus*)
C 1918–20: 112 (Cape Breton, N.S.); **8:** 33 (Hudson Bay)
J 9: 120 (Ungava Bay)
B 73: 7 (young in E Canada Arctic); **155:** 371 (full description)

Lumpsucker, leatherfin (*Eumicrotremus derjugini*)
C 8: 34 (Hudson Bay)
B 155: 370 (full description)
SS 1324 (arctic distribution & ecology)

Lumpsucker, Pacific spiny (*Eumicrotremus orbis*)
B 68: 293; **68R**: 337 (full description)
S 290 (W coast Vancouver Is.)

Lumpsucker, smooth (*Aptocyclus ventricosus*) (*Cyclopterichthys ventricosus*)
J 9: 141 (first B.C. record)
B 68R: 339 (full description)

Lunar cycle effects (*see* Moon)

Lunatia heros (*see* Drill, greater clam)

Lund, John Walter Guerrier
J 19: 501 (*Melosira* diatom periodicity)

Lurcher Shoal, N.S.
J 14: 931 (drift buoy experiments)

Lures (*see* Angling, Bait; Trolling)

Lusena, Charles Victor
J 10: 521 (preparation & viscosity of chitosans)

Lycastopsis (*Namanereis*)
S 831 (*L. catarractarum* proboscis)

Lycenchelys paxillus (*see* Eel, common wolf)

Lycenchelys sarsi (*see* Eel, Sars' wolf)

Lycenchelys verrilli (*see* Eelpout, wolf)

Lycodapus fierasfer (*see* Eelpout, blackmouth)

Lycodapus mandibularis (*see* Eelpout, pallid)

Lycodes (species?)
C 1902–05: 88 (Canso, N.S.)

Lycodes atlanticus (*see* Eelpout, Atlantic)

Lycodes brevipes (*see* Eelpout, shortfin)

Lycodes diapterus (*see* Eelpout, blackfin)

Lycodes esmarki (*see* Eelpout, Esmark's)

Lycodes lavalaei (*see* Eelpout, Laval's)

Lycodes palearis (*see* Eelpout, wattled)

Lycodes pallidus (*see* Eelpout, pale)

Lycodes reticulatus (*see* Eelpout, arctic)

Lycodes turneri (*see* Eelpout, polar)

Lycodes vahlii (*see* Eelpout, Vahl's)

Lycodopsis pacifica (*see* Eelpout, blackbelly)

Lyconectes aleutensis (*see* Red devil)

Lymphoid organ (*see also* Morphology)
S 35 (of shark)

Lyopsetta exilis (*see* Sole, slender)

M

Macallum, Archibald Byron
C 1902–05: 121 (*Cyanea* & *Aurelia* chemistry); **1918–20**: 134 (handicaps in using dogfish for food)
SS 16 (*Cyanea* & *Aurelia* inorganic chemistry); **18** (ocean paleochemistry); **37** (origin of inorganics in animal blood); **69** (surface tension re salts in living matter); **296** (body fluids & tissues paleochemistry)
J 3: 183 (obituary of)

MacArthur, M. Isobel
J 5: 1 (*Bacterium salmonicida* viability)

MacAskie, Ian Bruce
S 735 (leatherback turtles off B.C.)

MacBride, E. W.
C 1906–10: 217 (P.E.I. oyster & clam fishery)

MacCallum, Wallace Allison
J 8: 111 (chilled fish storage); **13**: 21 (deck & hold fish treatment); **14**: 627, 925 (frozen Atl. cod fillet storage); **20**: 483 (capelin oil & fatty acids), 1231 (effective fish-washing operations); **21**: 115 (water-thawing of cod), 539, 1397 (polyphosphate treatment of frozen cod), 719 (electronic cod thawing)
B 103 (handling & holding fish on trawlers); **126**: 41 (refrigerated seawater storage of cod)
PRA 45: 11 (incipient freezing for shipping fillets); **46**: 6 (cooling rate of gutted fish in holds); **55**: 14 (need flounders be gutted at sea?), 17 (fish spoilage factors at sea); **55**: 21, **60**: 7, **61**: 13 (pen construction for refrigerated holds); **59**: 15, 18, 22, **62**: 32 (icing & preserving fish in holds); **60**: 9 (fish plant quality re retail

store quality); **62:** 38 (automatic salt-fish washer); **66:** 9 (fillets from frozen plaice)
S 403 (bacteria & odour in trawler holds); **427** (fish freezing equipment); **455** (frozen vs. unfrozen sardines for canning); **781** (stored refrozen cod fillet changes); **834** (water-thawing cod blocks)
SS 997, 1251, 1372 (refrigeration & storage in trawlers); **1034** (Jugoslavia fish handling & refrigeration); **1082** (jacketed refrigerated fish holds); **1121, 1122** (chilling & freezing methods); **1389** (environment & physiological effects on trap cod quality)
Patent—Canada No. 563,417 (fish-washing machine)

MacClement, William Thomas
C 1911–14(II): 210 (Georgian Bay aquatic flora); **1915–16:** 11 (diatoms re lobster rearing)
J 4: 228 (obituary of)

MacDonald, Joan F.
CHN 9 (Gaffkemia lobster disease)

Macdonaldia rostrata (*see* Tapirfish, shortspine)

MacFarlane, Constance
C 8: 63 (Hudson Bay marine algae)
SS 446, 447, 495 (Atl. marine algae distribution, prevalence & ecology)

MacGregor, Donald Chalmers
S 306: 173 (economics of Canada's oceans)

MacGregor, Donald Gordon
J 9: 213 (sea current measurement); **11:** 32 (Bay of Fundy oceanography); **13:** 435 (Cabot Strait currents & transport); **19:** 895 (electromagnetic measurement of tidal flow)

MacIntosh, Frank Campbell
J 1: 497 (elasmobranch stomach urea & chloride)
SS 554 (seal water balance)

MacIntosh, Ruth Grant
J 21: 577 (frozen cod palatability)

MacIntyre, Reginald Leonard
CNG 58 (list of Board publications titles, 1955–60)

MacIntyre, William Gordon
J 21: 1475 (dissolved calcium carbonate in Labrador Sea)

Mackay, Alexander Howard
C 1901: 55 (mackerel shark paired fins); **1902–05:** 55 (Diatomaceae of Canso Harbour, N.S.); **1918–20:** 115 (Canadian diatoms); **1921:** 164 (some Sask. & Alta. diatoms)
SS 123 (Vancouver Is. E coast diatoms)

Mackay, Bruce Sinclair
J 11: 48 (Hecate Strait tidal currents)

MacKay, Donald Copeland Gibson
C 7: 335 (new *Paralithodes* species)
J 1: 191 (Dungeness crab growth)
B 62 (Dungeness crab)
PRP 8: 6 (Skeena R. salmon investigation); **11:** 18, **22:** 21 (Dungeness crab & migrations)
S 142 (Dungeness crab relative growth)
SS 404, 433, 777 (B.C. brachyuran crabs); **519, 620, 762** (Dungeness crab relative growth; rearing; behaviour); **763** (temperature & world distribution of *Cancer*)

MacKay, Margaret Elizabeth (*see also* Sawyer, Margaret Elizabeth)
C 7: 17 (hormone action on skate circulation), 439 (physiological effect of extractives in skate skin)
J 1: 239 (skate stomach innervation)
S 70 (bile in different fishes); **71** (eelpout digestive system)

Mackenzie, Beatty Alexander
PRA 61: 5 (seal feed habits)
S 386 (seal teeth sectioning for age determination)
SS 1035 (algae on gray seals)

MacKenzie, Oscar Fielding
PRA 34: 3 (obituary of J. J. Cowie); **41:** 3 (obituary of A. T. Cameron)

Mackenzie District (*see* Northwest Territories; *also* specific localities)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ., **NRB, NSB** Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Mackenzie River, N.W.T.
J 13: 759 (fishes distribution in drainage area)
B 72: 21 (fishery resource survey)
CCG 3: 8 (fish reduction plant)
CNG 64: 60 (fisheries productive capacity)

Mackerel, Atlantic (Biology) (*Scomber scombrus*)
C 1901: 61 (re sardine industry); **1902–05**: 2 (plankton feed), 91 (trematode parasites); **4**: 443 (spawning & development); **8**: 291 (intestinal bacteria)
J 4: 363 (flesh histidine); **7**: 96 (thiaminase in); **11**: 249 (Belle Isle Strait); **15**: 625 (temperature re distribution & landings); **16**: 823 (Miramichi Estuary)
B 7: 20 (Langerhans islets tissue); **155**: 284 (full description)
PRA 8: 4 (in herring nursery)
CNG 64: 20 (productive capacity)
S 234 (Malpeque Bay, P.E.I.)
SS 171 (tide effect on distribution); **231** (possible winter fishery); **266** (migrations); **966** (Bay of Fundy)

Mackerel, Atlantic (products)
C 8: 227 (flesh effect on dog gastric secretion)
J 3: 102 (thermal data for canning); **5**: 217 (pyloric caeca tryptic enzyme); **7**: 62 (*Clostridium* growth in canned), 96 (flesh thiaminase); **18**: 495 (proximate composition)
B 19 (pickling); **24** (canning brine-frozen); **59, 89** (oils; *see* their indexes)
PRA 1: 6 (canning brine frozen); **5**: 5 (for lobster bait); **6**: 14 (reddening of salted); **10**: 8 (freezing & storage for bait); **14**: 8 (fillet canning); **20**: 3 (trimethylamine oxide reduction during spoilage); **58**: 17 (for groundfish bait)
CFI 14 (fillet canning)
CGR 1 (pickling)
CHO 28 (steak canning)
CVI 17 (vitamins A, B, D)
S 41 (bacteriology); **101** (muscle heat capacity)
SS 737 (muscle autolysis)

Mackerel, chub (*Scomber colias*) (*Pneumatophorus colias*)
J 16: 509 (N.S. records)
B 155: 283 (full description)

Mackerel, frigate (*Auxis thazard*)
B 155: 280 (full description)

Mackerel, horse (*see* Bonito, Atlantic; Tuna, bluefin (Atlantic))

Mackerel, Pacific (*Pneumatophorus japonicus*) (*P. diego*)
B 68: 163, **68R**: 228 (full description)
PRP 56: 15 (school in Strait of Georgia)
S 851: 57 (possible B.C. resource)
SS 737 (muscle autolysis)

Mackereljack (*Trachurus symmetricus*) (*Decapterus polyaspis;* scad)
J 17: 221 (NE Pac. distribution)
B 68: 161, **68R**: 222 (full description)
CNG 64: 50 (abundant offshore B.C.)
S 851: 57 (possible B.C. resource)

MacKinnon, Dixon
J 10: 523 (Pac. salmon fry current responses), 548 (deflecting migrating salmon); **11**: 310 (olfactory perception in migrating salmon); **12**: 362 (salmon fry behaviour)
PRP 90: 21 (migrating salmon olfactory perception); **92**: 14 (guiding migrating young coho salmon); **95**: 53 (rate variation of salmon ascent up fish ladder); **99**: 24 (guiding sockeye fingerlings)
SS 964 (hormones effect on salmon fry); **1157** (artificial salmon spawning channel)

MacLean, Jill Enid
J 21: 1345, 1361, 1371 (rancidity in lean fish muscle: evaluation; variations; bacterial inhibition)

Maclellan, Delphine Caroline
J 17: 409 (Quoddy Region plankton re herring feed)

MacLeod, Donald John
C 2: 1 (lobster canning bacteriology & chemistry)

Macleod, John James Richard
C 3: 437 (fish muscle immediate post-mortem changes), 457 (rigor chemical changes)
S 17 (tests of fish insulin); **26** (isletectomy effects on fish)
SS 198 (glycogen of marine invertebrates & fishes); **199** (reducing substances in invertebrate & fish fluids)

MacLeod, Robert Angus
J 16: 561 (enzyme action on whale solubles viscosity), 679 (Pac. herring seasonal fat, etc. variations), 685 (condensed fish solubles preparation & properties); **17:** 125 (maturing sockeye salmon blood plasma analyses), 323 (maturing aquarium coho salmon biochemistry), 913 (herring collagen content); **18:** 93, 113 (liquefied herring animal feed products)
PRP 92: 20 (fishery products re yeast growth); **95:** 56 (black discoloration on crab shell); **96:** 11, **97:** 18 (marine bacteria nutrition & metabolism); **96:** 16, **104:** 23 (rumen cellulose digestion stimulated by fish products); **96:** 20 (unusual odour in gray cod shipment); **98:** 22 (toxicity of amines to bacteria); **101:** 17, **104:** 19, **105:** 19 (Na & K in seafoods); **111:** 23, **113:** 5 (condensed herring solubles nutritive feed values; correction on **J 16:** 931)
CVI 21 (herring solubles viscosity measurement)
S 377, 457 (rumen cellulose digestion stimulation); **379** (antibacterial action of amines); **388, 432, 478, 486, 487, 516, 521, 533, 608, 634** (marine bacteria nutrition & metabolism); **407, 408** (stickwater bacterial decomposition at high temperatures); **421** (propionic acid bacterial oxidation); **434** (Na & K in B.C. fishes); **547** (salmon muscle Na & K re migration); **601** (herring stickwater viscosity control); **615** (stored fish changes of Na, K, weight); **651** (turkey reproductivity); **866** (steelhead trout glycolytic enzymes)
SS 1036 (lactic acid bacteria sensitivity); **1083, 1084** (fish an edible resource); **1223, 1252** (tricarboxylic acid cycle enzymes)

Macoma balthica (a clam)
PRA 63: 3 (as green crab feed)

Macoma calcarea (a clam)
S 558 (as indicator of arctic water conditions)

Macoma secta (*see* Clam, sand)

Macoun, John
SS 272 (W coast Vancouver Is. marine investigations)

MacPhail, John Stuart
B 102 (bar clam resources); **128** (mechanical shellfish harvester)
PRA 52: 3 (winter flounder as clam predator); **54:** 19 (clam breakage in handling); **58:** 11 (marine baitworms); **63:** 3 (green crab as clam predator); **66:** 3 (mechanical shellfish digger)
CSG 22 (scallop fishery)
SS 1110, 1369 (mechanical shellfish digger); **1227** (quahaug explorations); **1253** (oyster farming escalator)

MacPherson, Andrew H.
SS 1409 (Foxe Peninsula, N.W.T., birds)

Macpherson, Hector Donald
PRA 63: 19 (Nfld. commercial longlining experiment)

Macpherson, Norman Letham
NSB 1 (Nfld. dried cod industry); **3** (Nfld. cod liver oil)

Macrocystis species (*see* Algae, marine; Kelp; Seaweed products)

Macropinna microstoma (*see* Barreleye)

Macrourus acrolepis (*see* Rattail, roughscale)

Macrourus bairdii (*see* Marlin-spike)

Macrourus berglax (*see* Grenadier, roughhead)

Macrourus holotrachys
B 155: 219 (reported off Nfld. banks)

Macrozoarces americanus (*see* Pout, ocean)

Macrura (*see also* Crabs; Lobster; Shrimps)
C 1906–10: 187 (list of B.C.); **1917–18:** 253 (E Canadian)
S 64 (B.C. species)

Mactra solidissima (*see* Clam, bar)

Madtom, tadpole (*Noturus gyrinus*) (*Schilbeodes mollis*)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal, **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax, **CJG**—St. John's, **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews, **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 11: 529 (on vitamin-B_1-destructive diet); **16:** 147 (associations in Ont. streams)
S 357 (Lake Winnipeg region); **481** (Man.)

Magaguadavic River, N.B.
PRA 32: 3 (smallmouth black bass)

Magistophora (*see* Flagellata)

Maggots
CHO 37 (in smoked herring)

Magnesium compounds (*see also* Crystals)
J 16: 7 (in Atl. coastal seawater)
S 478, 487, 638 (bacteria requirement for)

Mahadevan, Vaidyhnatha Iver
PRP 76: 85 (true freezing point of fish flesh); **77:** 106 (B.C. herring meal scorch & ignition temperatures)

Maillard browning of flesh products (*see* Browning)

Maine, Gulf of (*see also* Oceanography, Atlantic (NW coastal waters); Bay of Fundy)
C 6: 255 (oceanography re haddock)
J 1: 279 (phytoplankton); **3:** 189 (zooplankton); **15:** 1451 (larval herring; correction on **17:** 943); **17:** 181 (surface waters circulation), 933 (herring larvae distribution)
SS 200 (drift bottle circulation), **587, 588, 589** (biology of 3 copepod species)

Makaira albida (*see* Marlin, white)

Makaira nigricans (*see* Marlin, blue)

Mako (*Isurus oxyrinchus*) (*I. tigris*; mako shark; sharp-nosed mackerel shark)
J 20: 1353 (NW Atl. record)
B 155: 33 (full description)
AF 12e: 14 (description)

Malacocephalus occidentalis (*see* Grenadier, American straptail)

Malacosteus niger (*see* Loosejaw (Atlantic))

Malacostraca (*see also* Amphipoda; Cumacea; Decapoda; Euphausiacea; Isopoda; Mysidacea)
C 1911–14(II): 145 (Georgian Bay, Ont.); **1917–18:** 250 (Canadian)

Mallard duck (*see* Ducks; *also* Birds; Predators, bird)

Mallotus catervarius (*see* Capelin (Pacific))

Mallotus villosus (*see* Capelin (Atlantic); Capelin (Pacific))

Malococottus kincaidi (*see* Sculpin, blackfin)

Malpeque Bay, P.E.I. (*see also* Prince Edward Island)
C 1906–10: 37 (fauna)
J 2: 41 (lobsters); **5:** 8 (shipworms), 84 (starfish), 236 (oceanography); **16:** 7 (seawater composition)
B 22, 48 (oysters); **77** (bivalves)
PRA 2: 9 (oyster disappearance & return); **65:** 4 (oyster mortalities from "Malpeque disease")
CSG 27 (oyster disease)
S 234 (fishes)

Maltais, François
J 18: 851 (salt cod chemical characteristics)

Mammals, land (*see also* individual species; *also* Predators, land animals)
J 12: 491 (near Chubb Crater, Ungava)

Mammals, marine (*see also* Distribution; Dolphin; Porpoise; Sea lion; Seal; Walrus; Whale)
J 11: 267 (parasites)
B 59, 89 (oil characteristics & uses; *see* their indexes)

Man (*see also* Food (for man))
C 1918–20: 128 (result of urea ingestion)
J 5: 211 (result of trimethylamine oxide ingestion); **6:** 63 (toxicity of nitrite to)
B 7 (for tests of insulin from fishes); **75:** 22 (effect of shellfish toxicity)
PRA 2: 3 (stimulation of gastric secretion by fish tissues)
CHN 14 (re botulism)
SS 1041 (re fish & their parasites); **1215** (re the Universe)

Management of fisheries (*see also* Census; Fishery; Poisons; Quota; *also* names of international commissions; names of individual organisms)
C 6: 208 (whitefish)

J 4: 141 (pink salmon); **5**: 335, **6**: 483, **14**: 867 (sockeye salmon); **5**: 485, **6**: 37 (Atl. salmon); **6**: 250 (rainbow trout), 449 (Atl. oysters); **8**: 125 (salmonoids), 369 (butter clams), 383 (brook trout); **10**: 442 (economic approach); **12**: 85 (economic factors), 187 (winter flounders; correction on **12**: 942), 210 (trout lakes), 451 (Skeena R. salmon), 618 (trout in Copper L., N.S.); **14**: 669, 683 (economics & exploitation of sea fisheries); **15**: 867 (escapement needed for maximum yield)

B 5: 9, **43**: 4 (lobster); **21**: 56, **57, 99** (Atl. salmon); **22**: 28, **60**: 14, **131** (Atl. oyster); **32**: 46 (B.C. trout); **34**: 7 (B.C. oysters); **36**: 23 (pilchard); **47**: 34, **67**: 7, **143** (B.C. herring); **56**: 51 (Kamloops region lakes); **72**: 84 (Lake Athabaska); **83**: 123 (re pulpmill pollution); **93**: 47 (hair seals); **107** (Great Slave L.); **119**: 14, 226, 247, 248 (re fish populations statistics); **139** (Strait of Georgia trawl fishery); **142** (chinook & coho salmon); **144** (Atl. smelt); **145** (Atl. scallop)

PRP 61: 4 (butter clam size & digging)

NRB 10, 11: 22 (lobster, Nfld.)

NRS 2: 15, **15**: 34 (lobster, Nfld.)

S 205 (re Atl. fish culture); **230, 250** (rainbow trout, Paul L., B.C.); **231, 287, 288, 339, 412, 713** (B.C. salmons); **238, 245, 262** (B.C. edible molluscs); **258** (history in Canada); **259, 269, 275, 529, 676** (Atl. salmon); **266** (re fishery depletion); **267** (Canadian fisheries); **292, 293, 294, 295, 296** (general discussions); **300** (in NE Canada); **315** (B.C. fishery problems); **318, 315** (P.E.I. & N.B. speckled trout); **327, 378, 364, 411, 683** (B.C. herring); **329** (Ungava Bay); **334** (re B.C. recreational facilities); **364** (Pac. halibut); **528** (lobster); **535** (re quotas); **812** (effect of regulations on catch)

SS 397 (course for fish culture officers); **818** (B.C. butter clam); **836, 837** (Man. goldeye); **864, 923** (re B.C. herring catches); **899** (P.E.I. trout); **909** (resource use in B.C.); **994, 1031, 1059, 1119, 1245, 1295, 1317, 1352** (Atl. salmon); **994** (Pac. halibut); **1089** (Spear L., Indiana); **1139** (lobster)

Manefish (*Caristius macropus*)
B 68R: 175 (full description)

Manganese compounds
J 20: 229 (in B.C. whole herring meal)
B 125: 97 (determination in seawater)
PRP 95: 59 (oxide causing live crab shell blackening)
S 10 (in polychaete tube)

Manitoba (*see also* names of individual bodies of water and localities)
C 5: 381 (biological conditions of lakes), 441 (whitefish); **7**: 325 (ciscoes), 342 (*Triaenophorus*)
S 448 (northern limits of cyprinid fishes); **481** (supplement to list of fishes)
SS 31 (fishes & fisheries); **358** (fishing investigations & industries); **419** (native game fishes); **826** (whitefish industry); **836, 837** (goldeye management)

Manitoba, Lake
B 81 (walleye, sauger, perch)
SS 855 (walleye & sauger growth rate increase); **914** (optimum gill net size); **1402** (cormorant)

Mannan, Abdul
J 18 (deoxyribonucleic acid salmon enzyme derivatives), 483 (Atl. halibut flesh analyses variations), 495 (mackerel, tuna & swordfish proximate analyses), 893 (proximate analyses of fishes)

Mannitol
B 127: 33 (from kelp)

Man-O'-War fish (*Nomeus gronowi*) (bluebottle fish)
B 155: 329 (description)

Mansfield, Arthur Walter
B 137 (arctic & E Canada seals)
CAG 2 (Canadian Arctic walrus); **3** (instructions to Eskimos re walrus); **6** (netting of sea mammals, Belcher Is.)

Manta, Atlantic (*Manta birostris*) (devil ray; devilfish)
B 155: 66 (full description)

Manta birostris (*see* Manta, Atlantic)

Mantle
B 145: 9 (structure & function in Atl. scallop)
SS 537 (structure & function in Pac. oysters)

Manzer, James Ivan
J 8: 374 (B.C. groundfish dispersion & growth), 479 (tagging effects on lemon sole); **21**: 891 (*Oncorhynchus* vertical movement)
PRP 67: 31 (interesting movements of tagged fish); **68**: 51 (tagged lemon soles returns); **72**: 24, **86**: 13 (lemon soles growth rate); **73**: 70 (sand soles spawning population); **106**: 24 (young Pac. salmon early ocean residence)
S 426 (B.C. fur seal records on inside coast); **712** (pink salmon marine survival, distribution & migration)
SS 952 (fur seal studies extended); **1037** (pink & chum salmon tagging, Johnstone Strait); **1038** (gray whale observations)

Mapplebeck, Eleanor Gertrude
J 9: 148 (*Flavobacterium* in fish spoilage), 377 (halophilic bacteria survival); **13**: 201 (bacterial reduction of hydroxylamine preservative)
PRA 52: 28 (fish plant sanitation)

March, Beryl Elizabeth
J 18: 113 ("liquid herring" protein feed value); **20**: 229 (herring meal nutrient composition)
PRP 87: 42, **89**: 79, **90**: 10, **92**: 10, **94**: 27, **99**: 12, **101**: 27, **108**: 24, **111**: 23 (nutritive feed values of B.C. fish meals & condensed solubles); **113**: 3 (condensed herring solubles in turkey poult rations; correction on **J 16**: 931)
CVG 25 (nutritional & chemical changes in herring meal lipids); **26** (herring meal nutrient composition)
S 373 (heat effect on herring meal feed value); **425** (herring meals nutritive value); **641, 704** (storage & antioxidant effects on herring meal); **651** (turkey reproductivity)
SS 959 (factors affecting herring meal folic acid)

Marchant, Edward Howard
SS 813 (capelin as microsporidian host)

Marcotte, Alexandre
SS 1335, 1368 (ICNAF Canadian groundfish length frequency data)

Marcström, Arne
J 15: 685 (attraction of trinitrophenol for roaches)

Margaree River, N.S.
J 2: 299, **3**: 323, **4**: 48, 309 (fish predation by birds)
B 51, 57 (salmon); **58** (birds re salmon)
S 205 (fish culture); **333** (salmon)
SS 688 (stickleback entry into estuary)

Margarine
B 89: 275 (from fish oils)
PRP 79: 32 (from herring oil)
SS 936 (from seal oil)

Margariscus margarita nachtriebi (*see* Dace, northern pearl)

Margolis, Leo
J 10: 62 (bacterial flora of fasting fish); **11**: 267 (marine mammal parasites; correction on **16**: 385); **11**: 319 (amphipod parasites of B.C. whales; corrections on **16**: 385); **12**: 97 (helminth parasites of B.C. whales; corrections on **16**: 385); **12**: 121 (whale lice; correction on **16**: 385); **12**: 571 (*Anasakis* larvae in B.C. herring); **13**: 489 (parasites of B.C. Pinnipedia; correction on **16**: 385); **15**: 983 (Acanthocephala in Pac. salmons); **21**: 873 (new *Caligus* parasitic copepod)
S 543 (identity of *Lepeophtheirus* salmon parasites); **544** (new *Lecithophyllum* parasite species); **552** (*Cyamus* whale-lice); **618** (new *Cucullanus* nematode from flounder); **699** (new trematode hosts); **817** (parasite indicators of NE Pac. sockeye distribution); **869** (new *Paurorhynchus* trematode host)
SS 1039 (brown trout furunculosis); **1040** (new whale-louse host); **1041** (parasites, fish & man)

Maria (*see* Burbot)

Marie-Victorin, Frère
J 6: 459 (obituary of)

Marinating; Pickling (*see also* Brining; Cod, Atlantic (salted); Delicatessen; Herring, salted; Salt fish)

C 1: 279 (cause of "rustiness" in herring)
J 18: 833 (light pickle salting of cod)
B 19 (mackerel: curing & packing); **47**: 21 (Pac. herring); **52** (Atl. herring)
PRA 18: 3, **48**: 12 (Atl. herring); **61**: 12 (white spots on vinegar-cured herring)
PRP 37: 17 (surf smelt); **42**: 10 (chum salmon); **58**: 20, **72**: 33 (Pac. herring); **63**: 41 (anchovy)
CFI 20 (Atl. herring)
CGR 1 (mackerel); **2, 11** (Atl. herring)
CHO 34 (Atl. herring)
SS 791 (Pac. salmon)

Maritime Provinces of Canada (*see also* Newfoundland; *also* names of the individual provinces and their principal localities and fishes)
J 12: 85 (catches of commercial fishes), 287 (whelks distribution); **14**: 975 (nematode distribution in fish)
PRA 61: 5 (seal feed); **65**: 3 (oyster mortality)

Marketing fishery products
C 1918–20: 125 (dogfish & other selachians)
J 15: 1269 (Atl. cod & halibut prices)
B 1: 9 (plaice); **2**: 26 (lumpfish); **4**: 10 (muttonfish); **10**: 14 (lobster paste); **20**: 51, **25**: 24 (haddock); **33**: 8, **43**: 11 (lobster); **34**: 28 (Pac. oysters); **36**: 5 (pilchard); **44, 60**: 7, **131** (Atl. oyster); **47**: 18 (Pac. herring); **49**: 1 (Pac. halibut); **54**: 23 (lingcod); **89**: 375 (foreign specifications for marine animal oils); **90**: 7 (pink & chum salmon); **98**: 22 (beluga); **121** (Atl. herring); **130**: 36 (swordfish)
PRA 63: 19, **68**: 9 (Nfld. longlined fish)
NRB 18: 9 (Nfld. lobster)
S 299 (by-products)
SS 361 (burbot); **454, 581** (Pac. halibut)

Marking of animals (methods, returns and interpretation) (*see also* Mortality; Tagging; *also* names of animals)
C 5: 80, **8**: 351 (sockeye salmon)
J 2: 311, **3**: 27, **4**: 184, **6**: 483, **11**: 988 (sockeye salmon); **2**: 391, **4**: 1, **21**: 27 (Atl. salmon); **5**: 84 (starfish); **5**: 176, 258, **6**: 245, **12**: 210, **16**: 695, **17**: 739, **18**: 383, **19**: 149, 173 (various trouts); **7**: 88 (kokanee); **8**: 67, **10**: 293 (coho salmon); **8**: 67 (goldfish); **10**: 377, **20**: 305 (lobster); **12**: 834 (scallop); **15**: 19 (mathematical treatment of derivable information), 909 (juvenile B.C. herring); **18**: 383, **19**: 149 (injection of radioactive isotopes); **21**: 27 (young Atl. salmon for movements), 1019 (pink salmon for sea mortality), 1101 (pink salmon for growth rate)
B 98: 2 (beluga); **115** (bloodworm); **119** (mathematical treatment of derivable information; *see* its index); **128**: 20 (clams)
PRA 28: 4 (starfish); **41**: 14, **64**: 3, **69**: 12 (lobster); **70**: 16 (Atl. salmon)
PRP 2: 3, **5**: 11, **7**: 14, **25**: 18, **67**: 40, **71**: 11, **79**: 36, **87**: 37, **89**: 78 (sockeye salmon); **15**: 10, **20**: 3, **22**: 17, **34**: 8, **48**: 13, **57**, 8 (pink salmon); **32**: 15 (kokanee); **51**: 3, **62**: 3, **73**: 56, **94**: 7 (coho salmon); **62**: 3 (chum salmon); **62**: 3, **73**: 56, **94**: 7 (chinook salmon); **80**: 50 (Pac. salmons); **91**: 13 (sockeye fry with coloured thread)
CCG 6: 13 (lampreys with radioactive isotopes)
CJG 9: 18 (Atl. salmon, Nfld.)
CSG 24 (lobster)
S 187, 192, 256, 280 (Atl. salmon); **268** (pink salmon); **443** (purposes; methods; effects); **842** (mortality aspects)
SS 614 (Cultus L. sockeye salmon returns); **778** (pintail ducks); **1024** (young Pac. herring); **1033** (method for polychaetes)

Marlin, blue (*Makaira nigricans*)
B 155: 294 (Maritimes occurrence)

Marlin, white (*Makaira albida*) (spearfish)
B 155: 293 (full description)
S 226 (off N.S.)

Marlin-spike (*Nezumia bairdi*) (*Macrourus bairdii*; common grenadier)
B 155: 223 (full description)
S 226 (off N.S.)

Marshall, Harry Borden
B 39 (pollution from pilchard reduction plants)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Marsipobranchii
B 68: 46, **68R**: 66 (B.C. Cyclostomata)
AF 12d (Atl.)

Martin, Gérard-B.
S 640 (lingcod muscle phospho-sugar enzymes)

Martin, John Russell
S 48 (marine algae growth re depth)

Martin, Nigel Vernon
J 11: 5 (Algonquin Park lake trout catch & feed); **12**: 487 (limnology & biology of Chubb Crater region, Que.) **17**: 541 (hybrid trout life history)

Martin, William Howard
C 1911–14(I): 73 (frozen fish revival); **7**: 295 (cause of gill-net sinking)

Martin, William Robert
J 14: 975, **16**: 213 (Atl. cod fillet nematode incidence); **17**: 169 (N.B. projected tidal power re groundfish catches); **21**: 215 (N.S. winter cod taggings)
PRA 50: 3 (Atl. halibut movements); **58**: 17 (groundfish baits relative efficiency); **61**: 4 (halibut tag recoveries); **69**: 33 (dragger net-mesh regulation effects)
CSG 5 (longlining); **12** (Maritimes flounders); **17** (flounder dragging); **40** (Canadian Atl. mainland fisheries trends)
CSS 1, 2, 5, 6, 7, 8, 9 (Maritimes groundfish landings)
S 369: 26, **497A, 497C, 497E, 497F**: 23, **556, 584A, 680, 724, 789** (ICNAF groundfish reports on Canadian research, 1952–61); **716** (redfish catches distribution)
SS 890 (fishes body form re environment); **900** (dory schooners vs. otter trawlers); **1001, 1085, 1192, 1211, 1232, 1254, 1300, 1335** (ICNAF Canadian groundfish research); **1123, 1191** (ICNAF interest in salt cod); **1224** (Spanish pair-trawling operations); **1392** (fisheries research applications)

Maskinonge (*Esox masquinongy*) (muskellunge)
C 1911–14(II): 35 (Lake Huron)
J 8: 347, **17**: 919 (feed; growth); **13**: 599 (sanctuary population); **20**: 1213, **21**: 727 (population dynamics); **21**: 1043 (heat resistance of pike hybrids)
B 7: 20 (Langerhans islet tissue)
SS 1076 (variations in Canada)

Mason, M. S.
SS 1366 (coenzyme B_{12} electron spin resonance)

Masses, oceanic water (*see* Transport of ocean water masses)

Masset, B.C.
J 15: 634 (air temperatures)

Masset Inlet, B.C. (*see* McClinton Creek, B.C.)

Mastigophora
PF 1e (Pac.)

Masu (salmon) (*Oncorhynchus masou*)
J 18: 679 (osteology; phylogeny)
S 551 (re genus origin & speciation)

Mathematical treatment of data (The following list is not exhaustive; *see also* Forecasting; Statistical methods; Statistics; *also* other cognate subjects)
J 8: 281, **15**: 19, **21**: 1245 (fish population estimates); **14**: 464 (evaporation from the sea); **20**: 525 (resistance of organisms to toxicity)
B 119 (fish populations biological statistics)
CPO 1964-4 (notes on running means)
S 109, 595 (freezing rate of fish)
SS 810 (formulation of biological productivity); **944** (mathematics & science)

Mather, Vera G.
S 36 (Pac. lamprey velar apparatus)

Mathews, William Henry
SS 1313 (ancient seawater in Powell L., B.C.)

Mating experiments (*see also* Hybridization; Reproduction)
PRP 90: 8 (lobster in B.C.)
NRB 16: 48 (Nfld. lobster)
SS 131 (lobster)

Matter, particulate (in natural waters) (*see also* Detritus; Plankton; Productivity)
B 125: 107 (chemical analysis for)
S 858 (review of origin, nature & composition; bibliography)

Maturation; Maturity (*see also* Growth; Life cycle)

1914–15: 87 (hake), 95 (haddock); **3:** 281 (spring salmon); **7:** 255 (bivalves); **8:** 2 (Coregonidae)

J 1: 1, **18:** 663 (copepods); **2:** 41, **6:** 281, **17:** 553 (lobster); **3:** 159, **17:** 913 (B.C. herring); **4:** 195, **10:** 314, **17:** 113, 125, 347, 565, **20:** 95 (sockeye salmon & biochemistry of; corrections on **17:** 943, **21:** 1553); **4:** 233 (pink salmon); **6:** 140 (littleneck clam); **7:** 176, **11:** 827 (lake trout); **8:** 347 (maskinonge); **10:** 314, **17:** 323 (coho salmon & biochemistry of); **10:** 326 (arctic char), 413, **20:** 749 (whitefish); **11:** 535, **17:** 41 (haddock); **13:** 161 (American plaice), 799 (speckled trout); **17:** 641 (Dungeness crab), 775 (Atl. cod), 929 (dwarf coastrange sculpins); **18:** 31 (Nfld. herring), 513 (Pac. cod), 663 (*Calanus* species); **19:** 113 (Great Slave L. longnose sucker), 489 (W Arctic *Mesidotea* isopod), 715 (effect of feed on); **20:** 859 (brook trout re light & temperature), 1397 (bigmouth buffalo); **21:** 773 (re fur seal age), 1333 (eulachon), 1403 (B.C. pandalid shrimps)

B 1: 12 (plaice); **3:** 15 (angler); **21:** 7 (Atl. salmon); **25:** 12 (haddock); **54:** 21 (lingcod); **81** (Lake Manitoba fish); **83:** 4 (corigonine fishes); **105:** 79 (Atl. cod); **111:** 46 (Atl. herring); **115:** 15 (bloodworm); **118:** 28 (ringed seal); **131:** 27 (Atl. oyster); **132:** 39 (pilot whale); **144:** 9 (Atl. smelt)

PRA 6: 7 (Atl. salmon)

PRP 19: 11 (trout); **18:** 10 (B.C. herring); **61:** 4 (butter clam); **73:** 68 (lemon sole); **75:** 46 (Skeena sockeye); **79:** 30 (whales)

NRB 6: 23 (haddock); **7:** 26, **16:** 42 (lobster); **17:** 29 (Atl. capelin)

NSB 2: 3 (lobster)

S 72 (littleneck clam); **73** (butter clam); **223** (Atl. salmon); **237** (kokanee); **270** (Ont. salmon); **352** (finback whales); **482** (Ungava Bay decapods); **517, 520, 536, 537, 539, 573, 605** (spawning migratory sockeye biochemistry; **722** (distinguishing immature from maturing sockeye vs. chum salmon)

SS 532 (sockeye age at); **722** (Fraser R. sockeye propagation); **831** (coho salmon heritability of age at); **1385** (hormones effect on Atl. salmon)

Maurice Lake, B.C. (*see* Skeena River drainage system lakes)

Maurolicus muelleri (*see* Pearlsides, Müller's)

Mavor, James Watt

C 1911–14(I): 25 (Passamaquoddy fishes Sporozoa); **1914–15:** 145 (prospective N.B. oyster culture); **1917–18:** 111 (Bay of Fundy pollock age & growth); **1918–20:** 125 (Atl. dogfish & other sharks utilization); **1:** 101 (Bay of Fundy drift bottles results), 353 (Bay of Fundy hydrography)

SS 118, 132, 148 (fish protozoan parasites); **200, 201, 218, 219** (drift bottles re Atl. ocean currents)

Maximum sustained yield (*see* Yield, maximum sustained)

Maxwell, Brian Edward

J 9: 164 (vitamin B_{12} in B.C. marine invertebrates); **15:** 5 (B.C. sea lion abundance)

May, Arthur William

J 21: 413 (asymmetrical pair of cod otoliths)

S 584C (ICNAF cod investigations); **786. 792, 793** (ICNAF reports on measurement of trawl-net meshes)

SS 1325, 1415 (ICNAF Canadian groundfish length frequencies data)

Mayflies

C 1911–14(II): 53 (rearing, ecology & life history of, Georgian Bay); **7:** 177 (Lake Winnipeg)

J 16: 147 (Ont. streams)

SS 59 (new species & life histories); **110** (*Siphonurus* group)

Maynea species (*see* Eelpouts)

Mayoh, Helen Margaret

PRP 102: 22 (volatile reducing substances as freshness test)

S 444 (olfactory perception in migrating salmon)

McAllister, Carey Douglas

J 18: 1 (NE Pac. oceanic plankton); **21:** 139 (phytoplankters cell division rates), 159 (phytoplankton photosynthesis)

CPO 1959-1, 1959-3, -15, -21, 1960-8, -11, -13, 1961-24a, 1962-20 (oceanographic observations between Juan de Fuca Strait & ocean weathership); **1959-17** (B.C. coastal approaches oceanography); **1959-20, 1961-26** (waters productivity at ocean weathership); **1961-19** (phytoplankton biology in plastic sphere)

S 631 (NE Pac. primary productivity & fertility); **673** (light attentuators for marine photosynthesis studies); **682, 816** (plankton production in plastic sphere); **754, 755** (C^{14} marine photosynthesis); **828** (NE Pac. diurnal productivity variation)

McAllister, Donald Evan

J 18: 141 (chub & trout-perch northern range extension); **21:** 1339 (sculpins distinguishing characters)

S 826 (*Melanostigma* eelpout genus revision)

SS 1393 (E Hudson Bay fish collections)

McBride, John Raymond

J 16: 561 (enzyme action on whale solubles viscosity), 679 (Pac. herring seasonal fat, etc. variations); **17:** 913 (Pac. herring collagen content); **18:** 93, 113 (liquefied herring animal feed products); **19:** 327, **20:** 1457 (salmon olfactory perception); **20:** 95 (sockeye salmon survival after advanced gonad development; correction on **21:** 1553); **20:** 1435 (sockeye anaesthetic)

PRP 104: 19, **105:** 19 (Na & K changes in fish stored in refrigerated seawater); **111:** 23 (B.C. herring condensed solubles nutritive vlaue)

S 434 (Na & K in B.C. fishes); **547** (salmon muscle Na & K re migration); **601** (herring stickwater viscosity control); **615** (storage effects on Na, K & weight of fish); **666** (migrating adult salmon olfactory perception); **846** (juvenile salmon olfactory perception)

McCann, J. A.

SS 1336 (ICNAF Canadian groundfish length frequency data)

McCauley, Robert William

J 17: 583 (conductivity of water re shocking lampreys), 601 (aquarium water dechlorination); **20:** 483 (lamprey eggs lethal temperature)

PRC 2: 18 (electrical barrier effect on lamprey movements)

CCG 3: 1 (sea lamprey zoological position); **4:** 1 (a German trout farm)

SS 1225 (Ont. sea lamprey commercial fishery)

McClinton Creek, B.C.

J 3: 403, **4:** 141, 233, **6:** 217, **7:** 224 (transplanting, hatchery practice, migrations, etc. of pink salmon)

B 55: 8 (predator–prey relations)

PRP 10: 5, **20:** 3, **22:** 17, **33:** 3, **35:** 14, **41:** 6, **48:** 13 (transplanting, hatchery practice, migrations, etc. of pink salmon)

S 148 (fish preying on pink salmon fry); **257** (pink salmon upstream migration factors)

McColl, E. L.

SS 631 (*Diphyllobothrium* cestode taxonomy)

McCombie, Alen Milne

J 10: 253 (phytoplankton growth factors); **17:** 871 (*Chlamydomonas* algae growth factors); **20:** 735 (fish distribution in gill nets)

McConnell, John Anderson

J 8: 103 (Lakelse L., B.C., sockeye salmon survival)

PRP 68: 55, **78:** 6 (Kitwanga & Babine Lakes limnology)

McCormick, Norman A.

C 2: 115 (fish insulin yields)

B 7 (insulin from fish)

S 24 (Langerhans islets distribution & structure in fish); **26** (isletectomy effects on fish)

SS 273 (insulin from fish)

McCracken, Francis Derwood

J 12: 187 (isopleth diagrams to predict fishery yields; correction on **12:** 942); **15:** 1269 (Atl. halibut biology & fishery); **17:** 175 (Passamaquoddy Bay haddock); **20:** 551 (winter flounder seasonal movements; correction on **21:** 1553); **20:** 855 (haddock migrations)

PRA 50: 3, **61:** 4, **64:** 10 (tagged Atl. halibut recoveries); **58:** 17 (groundfish baits efficacy); **64:** 10, **67:** 16, **72:** 8 (Atl. cod tagging & recoveries)

CSG 17 (flounder dragging)
CSS 1, 2, 3 (N.S. groundfish landings, 1947–49)
S 554 (ICNAF re Gulf of St. Lawrence cod trawl fishery); **555, 584B** (ICNAF gear selection research); **715** (incidental redfish catches); **850** (hooks & codend-mesh selection for groundfish); **854** (cod tags & techniques comparisons)
SS 1124, 1256 (Canadian Atl. halibut fishery); **1144** (Norwegian jigger); **1193** (French trawler methods); **1225** (Passamaquoddy Bay winter flounders); **1226** (tagging publicity methods); **1257** (codend selectivity); **1394** (report on fishing-net textile products)

McCracken, Laurie Hyslop
PRP 102: 24 (seawater salinity determination)

McCrimmon, Hugh Ross
J 11: 362 (stream-planted Atl. salmon); **18**: 1153 (Ont. brook trout pond fishery); **19**: 489 (W arctic *Mesidotea* isopod); **21**: 239 (landlocked sea lamprey serum)
SS 917 (re-introduction of Atl. salmon into Ont. streams)

McCurdy, G. A.
SS 619 (biochemical recognition of haddock from cod fillets)

McDermott, Lawrence Alfred
J 19: 989 (furunculosis in Ont. fishes)

McDonald, D. L.
C 1906–10: 83 (Passamaquoddy Bay Crustacea)

McDonald, John George
J 17: 655 (emigrant Pac. salmon fry behaviour); **21**: 1329 (sockeye salmon stock size & resultant production)
PRP 104: 34 (sockeye fry production, Lakelse L., B.C.)
SS 1258 (sockeye egg survival assessment error)

McFarlane, Alexander Stirling
J 15: 701 (fillets trimethylamine value)
PRA 4: 6, **9**: 4 (smoking fillets & haddies); **10**: 8, **13**: 7, 9 (bait freezing & cold storage)

McFarlane, Samuel Hanford
J 2: 335 (endoparasitic trematodes, Departure Bay, B.C.)
SS 496 (a trematode with uroproct); **558** (Departure Bay endoparasitic trematodes)

McHardy, Robert Alexander
J 21: 555 (marine ostracods), 639 (vacuum subsampler for plankton)

McHugh, John Laurence
J 5: 131, 337 (Rocky Mountain whitefish feed & growth), 347, 474 (B.C. herring vertebrae characteristics)
B 56: 39 (Okanagan Valley, B.C., whitefishes); **64** (B.C. smelts)
PRP 28: 11 (B.C. eastern whitefish); **40**: 17, **44**: 18, **49**: 18 (eulachon); **41**: 20, **43**: 6, **50**: 3 (B.C. herring)
S 247 (B.C. herring tagging)
SS 945 (an abnormal carp)

McInerney, John Edward
J 21: 995 (migrating Pac. salmons salinity preferences)

McIntyre Bay, B.C. (*see also* Queen Charlotte Islands)
PRP 107: 22 (abundance of post-larval crab); **109**: 16 (Dungeness crab tagging)

McIver, Alan Robert
CSG 35 (Gulf of St. Lawrence 1961 scallop explorations)

McKenzie, Russell Alderson
C 8: 433 (Atl. cod coastal movements)
J 5: 105 (N.S. autumn cod spawning); **12**: 698 (cod populations vertebral counts); **15**: 1313 (N.B. smelt age & growth), 1329, **18**: 221 (Bay of Fundy herring movements); **16**: 807 (Miramichi R. & estuary fishes); **17**: 133 (N.B. herring fishery; correction on **17**: 944); **20**: 1097 (NW Atl. opah), 1101, 1353 (NW Atl. dusky & mako sharks); **21**: 203 (SW N.S. herring spawning), 863, 865 (NW Atl. porbeagle & blue shark morphometry)
B 23 (S Ont. fish trade); **61** (cod fishery off Halifax); **69** (haddock fishery); **70** (NE N.B. smelt fishery); **71** (Atl. halibut fishery); **105** (Atl. cod tagging programs)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

PRA 4: 10 (temperature re haddock); **10**: 4 (cod colour changes); **12**: 3, **17**: 11, **24**: 6 (temperature re cod); **13**: 10 (cod spawning); **16**: 7 (captive cod); **22**: 3, **26**: 8 (cod migrations); **22**: 12 (cod feeding); **24**: 12 (increased N.S. haddock landings); **25**: 3 (Cape Breton cod), 12 (N.S. flatfish species); **28**: 9 (Jordan Harbour haddock), 14 (Bradelle Bank cod); **29**: 6 (cod tagging); **34**: 5 (smelt catches), 7 (smelt box nets); **35**: 24 (stream clearance for smelt); **39**: 11 (crowding smelt eggs); **65**: 17 (smelt grading); **70**: 10 (herring tagging)

CSG 2 (offshore fish landings); **7** (prairie jigger); **15** (smelt, capelin, & silverside descriptions); **16** (ice chisel); **43** (NW Atl. tunas & bonitos)

S 203, 226, 235 (N.S. fishes & salps); **308** (celluloid opercular fish tag); **336** (Greenland cod in N.B. bay); **365** (arctic cod in Miramichi Bay); **437** (silver hake in Gulf of St. Lawrence); **739** (Miramichi smelt fishery)

SS 382 (pollution effects on Winnipeg R., Ont., fishes); **479, 559** (sea temperatures re cod); **575** (N.S. marine fishes); **594** (monkfish); **1259** (Atl. smelt fishery)

McKercher, Betty Helen (*see also* Morton, Betty Helen)

PRP 64: 53 (agar & algin from B.C. seaweeds); **65**: 67 (unsaponifiables from various oils); **68**: 43 (flatfish liver oils & vitamin A)

CVI 8 (flatfish liver oil & vitamin A)

McKernan, Donald Lynn

J 17: 127 (Passamaquoddy Fisheries Board Investigation Report No. 1)

SS 1231 (Passamaquoddy investigations, 1957–58)

McLaren, Barbara Alberta

J 17: 1 (time & temperature effect on cod fillet cooking)

McLaren, Ian Alexander

J 15: 219 (bearded seal growth & reproduction); **20**: 685 (plankton growth & vertical migration re temperature)

B 118 (ringed seal biology)

CAG 1 (E arctic seals economics); **6** (netting Belcher Is. sea mammals)

S 594 (Caspian Sea & Lake Baikal seals origin); **625** (are the Pinnipedia biphyletic?); **649** (Lake Hazen biennial copepod); **765** (E arctic seals population dynamics & exploitation); **767** (E arctic ringed seals numbers & availability)

SS 1395 (arctic waters marine life); **1409** (Foxe Basin birds)

McLean, Norma Lillian

J 13: 861 ("bilgy" fish)

McLeese, Donald Wilson

J 13: 247 (hydrographic effects on lobster survival); **15**: 1345 (lobster activity & catchability re temperature); **18**: 367 (inactivating lobster claws)

PRA 62: 24, **66**: 24 (holding conditions for live lobsters)

SS 1125 (holding live lobsters); **1194** (air shipping lobsters)

McLellan, Hugh John

J 7: 335 (NW Atl. temperature cycles); **9**: 213 (current measurement); **10**: 155, **11**: 404, 419, **12**: 375 (Scotian shelf oceanography); **13**: 297 (sharpness of oceanographic boundaries); **14**: 213 (slope water); **15**: 115 (Bay of Fundy tidal energy)

PRA 42: 4, **43**: 7, **53**: 3 (W Atl. sea temperature fluctuations & cycles); **58**: 23, **59**: 12, **60**: 19, **61**: 10, **62**: 14 (Scotian Shelf bottom temperatures); **59**: 7 (Canso Strait waters before causeway)

SS 1086 (hydrography practical applications); **1126, 1161** (sea temperature prediction)

McLeod, Donald Cameron

J 10: 125 (B.C. coast surface waters oceanography)

McMahon, Vernon Herbert

J 11: 479 (entomostracan plankton, Lakelse L., B.C.)

PRP 74: 6, **78**: 6 (Morrison & Babine lakes limnology)

McMullon, Patrick William Gerard

J 20: 1067 (underwater observation of Atl. herring spawning)

McMurrich, James Playfair

C 1906–10: 33 (Passamaquoddy Bay Actiniae); **1915–16**: 1 (Passamaquoddy Bay winter plankton)

SS 38, 71, 93 (Pac. salmons life cycle & age from scales); **44** (Passamaquoddy Bay

Actiniaria synonomy); **70** (2 new B.C. actinians); **72** (B.C. salmon fisheries); **94** (halibut age from scales); **149** (B.C. coastal plankton); **157** (Passamaquoddy Bay crustacean plankton); **220** (*Sagartia* actinian systematics & distribution)

J 4: preceding page 309 (obituary of)
SS 684 (obituary of)

McMurtrie, Gilbert Eric
PRP 77: 95 (fish flesh parasite detection by X-rays)

McMynn, Robert Gordon
J 14: 203 (cutthroat & steelhead trout scale characteristics)
PRP 76: 81 (Queen Charlotte Is. crab fishing)
B 91 (Graham Is., B.C., crab fishing)
SS 998 (salinity effects on Pac. herring development)

McNairn, Norman Alexander
J 2: 401 (Atl. herring fatness, digestion & feed)

McNaught, Donald Curtis
J 21: 291 (*Daphnia* movements)

McNeil, William John
J 21: 1385 (pink salmon egg recruitment)

McNeill, Ronald Joseph
S 455 (frozen vs. unfrozen sardines for canning)

McPhail, John Donald
J 18: 793 (N American arctic char complex); **20**: 27 (ninespine stickleback N American geographic variation)

McPhail, Marjorie Estelle
CHN 5 (salt cod bibliography)

McPhail, Murchie
SS 340, 379 (Strait of Georgia oceanography re phytoplankton)

McRae, Gordon Percy
J 18: 47 (otolith preparation)

Mead, Giles Willis
J 10: 560 (NE Japan ocean fishes collection)

Meals, marine animal and freshwater fish (*see also* Feedstuffs; Poultry feed; Protein concentrate; Reduction; Solubles, condensed; Stickwater)

J 7: 513, 563 (amino acids of B.C. herring & salmon); **10**: 64 (vitamin B_{12} of B.C. herring); **13**: 791 (fat determination of Atl. cod & herring); **18**: 85 (from cod & haddock viscera & liver); **20**: 229 (B.C. whole herring meal nutrient composition)

B 25: 27 (haddock); **35**: 7, **36**: 19 (pilchard); **47**: 26 (B.C. herring); **59**: 425 (oil changes re rancidity of)

PRA 3: 3 (preparation from oily fish); **5**: 14, **9**: 6, **10**: 8 (in livestock feeding); **7**: 14 (horn-like plastic from); **10**: 8 (digestibility); **23**: 3 (solids recovery from stickwater); **42**: 6 (cholesterol from); **48**: 4, **49**: 5, **54**: 3 (from cod liver oil extraction residues)

PRP 22: 15 (chum salmon egg, for hatchery feed); **37**: 19, **66**: 4, **77**: 106, **85**: 83, 86, **87**: 42, **89**: 79, **90**: 10, 14, **92**: 10, **94**: 27, **99**: 12, **108**: 24 (herring); **69**: 66, **73**: 50, **77**: 97 (amino acids); **73**: 58 (bone meal); **77**: 106 (scorch & ignition temperature); **77**: 112 (moisture determination); **88**: 66, **93**: 18 (freshwater fishes); **89**: 82 (shrimp); **90**: 14 (pilchard); **101**: 27 (herring plus whale solubles meal); **108**: 24 (herring; menhaden); **110**: 13 (dogfish)

CVI 11 (essential amino acids of various)

CVG 24, 25, 26 (nutritional properties of various); **32** (bulk handling of herring)

NSR 10 (simple production method); **11** (uses)

S 299 (utilization developments); **310** (vitamin B_{12} in B.C. salmon & herring); **373, 374** (overheating effect on nutritive value of B.C. herring); **425, 641, 704** (heat & storage effect on oil of B.C. herring); **729** (pilot plant for manufacture in arctic)

SS 134 (dogfish); **341** (drying temperature re nitrogen partition); **342** (analyses of, from fresh vs. putrid fish); **959** (drying temperature effect on herring meal folic acid); **1204** (from groundfish viscera, for stock feed)

Medaka (*Oryzias latipes*)
J 16: 363 (bibliography)

Medcof, John Carl
J 4: 287, **12**: 270 (Atl. oyster spatfall & larval life); **5**: 253 (oyster condition re temperature & salinity); **6**: 209 (oyster shell formation & quality), 449 (oyster condition re re-laying & transferring); **7**: 219 (snail–clam commensalism); **15**: 1355 (clam drill control); **19**: 101 (factors affecting shellfish toxicity); **877** (Passamaquoddy tidal power project re shellfish); **20**: 451 (scallop mass mortality)
B 75 (Canadian Atl. shellfish occasional toxicity); **102** (bar clam resources); **131** (Atl. oyster farming)
PRA 35: 11 (oyster transfer effect on condition); **44**: 6 (scallop meat yields); **45**: 3 (scallop shell disease), 6 (sunlight effect on young oysters); **50**: 17 (clam burrowing habits); **52**: 3 (flounder predation on clams), 9 (scallop savings gear); **54**: 19 (clam handling breakages); **71**: 21 (shellfish resources), 27 (introducing European oysters to E Canada)
COF 17 (seed oysters at Shippegan, N.B.)
CSG 9 (clam farming); **26** (green crab as predator); **32** (Board publications on oysters, 1931–58); **34** (rehabilitating diseased oyster stocks); **36** (oyster spat collecting & bedding
S 277 (N.B. green oysters); **284** (Gulf of St. Lawrence sunfish); **301** (herring gull feeding habit); **490** (shad nuptial behaviour); **518** (1957 N.B. toxic shellfish epidemic); **579** (stored oysters); **592** (toxic shellfish poisoning control); **760** (trial introduction of European oyster); **761** (hydraulic escalator effect on immature clams); **835** (puzzling sea-bottom clay tubes)
SS 714 (*Campeloma* snail life cycle); **746** (hibernated oysters coliform bacteria content); **814** ("reversed" winter flounders); **1018, 1071** (Ceylon red seaweed resources); **1107** (Ceylon beach seine fishery); **1111** (scallop fishery re environment); **1131, 1370** (Ceylon fishery productivity); **1179** (European oyster transplant to N.B.); **1227** (Northumberland Strait quahaug explorations); **1337** (hydraulic escalator oyster harvesters); **1369** (mechanical soft-shell clam digger); **1396** (ICNAF research)

Medusae (*see* Jellyfish)

Megalops atlanticus (*see* Tarpon)

Megaptera nodosa (*see* Whale, humpback (Pacific))

Megaptera novaeangliae (*see* Whale, humpback (Atlantic); Whale, humpback (Pacific))

Meikle, John
CPO 1961-2, 1962-15 (oceanography between Juan de Fuca Strait & ocean weathership)

Melamphaes bispinosus
J 19: 307 (NE Pac. distribution)

Melamphaes cavernosus, M. lugubris (*see* Melamphid, highsnout)

Melamphaes rugosis (*see* Melamphid, crested)

Melamphid, crested (*Melamphaes rugosis*)
B 68: 141, **68R**: 176 (full description)

Melamphid, highsnout (*Melamphaes lugubris*) (*M. cavernosus*)
J 19: 307 (NE Pac. distribution)
B 68: 142, **68R**: 177 (full description)

Melanogrammus aeglefinus (*see* Haddock)

Melanostigmata atlanticum; M. gelatinosum; M. microphthalmus; M. pammelas (*see* Eelpouts)

Melosira islandica (a diatom)
J 19: 501 (periodicity in Great Slave L.)

Melting point (*see also* Freezing point)
B 59, 89 (marine animal fats, oils, & their derivatives; *see* their indexes)
PRP 32: 17, **36**: 16 (fish oils)
S 567 (re zone-melting purification apparatus)

Melville, C. D.
SS 119 (E coast James Bay fisheries)

Menhaden, Atlantic (*Brevoortia tyrannus*) (mossbunker; pogy)
J 16: 505 (large N.B. specimens)
B 59, 89 (oil & uses; *see* their indexes); **155**: 93 (full description)

Menidia menidia; M. notata (*see* Silverside, Atlantic)

Menzies, Thomas Philip Oxenham
SS 327 (Nanaimo Biological Station work)

Mercaptans
J 13: 865 (in "bilgy" fish spoilage)

Mercenaria mercenaria (*see* Quahaug)

Mergansers (*see also* Birds; Predators, bird)
J 2: 299, **3:** 323, **4:** 309, **5:** 227, **11:** 388 (American, as Atl. salmon & trout predator)
B 17: 32 (as B.C. herring predator); **58, 116** (as B.C. salmon, etc. predator); **133** (re predation on Atl. salmon, & control; correction on **J 21:** 1554)
PRA 51: 12 (control re Atl. salmon stocks)
S 212 (feed habits, B.C.); **398, 507** (Atl. salmon predator, & control)
SS 435, 503, 597 (feed studies of American); **884** (B.C. trout predator; **1388** (predation on Atl. salmon)

Meristic characteristics (*see also* Morphology; Morphometry)
J 11: 171 (yellowtail flounder); **14:** 573 (kokanee, Kootenay L., B.C.); **19:** 687 (*Coregonus nasus* & other whitefishes)

Merlan (*see* Pollock)

Merluccius albidus (*see* Hake, offshore)

Merluccius bilinearis (*see* Hake, silver)

Merluccius productus (*see* Hake, Pacific)

Mesh of fishing gear (*see also* International Commission for the Northwest Atlantic Fisheries; Net; Nets)
J 16: 339 (mathematical treatment of selection in herring gill nets)
PRA 69: 33 (regulation of, in dragger fishery)
CNG 61 (regulation of, in Strait of Georgia trawls)
S 786, 792, 793 (comparison of measurements by gauges); **850, 874** (selective action of codend in otter trawl)
SS 1085 (new Atl. fisheries regulations); **1257** (codend selectivity re chafing gear types)

Mesidotea entomon (an isopod)
J 19: 489 (W arctic waters)

Mesoplodon bidens (*see* Whale, Sowerby's beaked)

Mesoplodon densirostris (*see* Whale, beaked (Atlantic))

Mesoplodon mirus (*see* Whale, True's beaked)

Mesoplodon stejnegeri (*see* Whale, Stejneger's beaked)

Metabolism (*see also* Activity; Physiology; for metabolism of sockeye salmon during spawning maturity, *see* series of references under Biochemistry; *and* Salmon, sockeye (biology))
J 6: 45 (glucose in bacteria); **16:** 175 (in acting and resting fish); **19:** 1025 (respiratory, in Pac. salmon); **20:** 273 (respiratory, in Atl. cod); **21:** 1183 (young sockeye salmon), 1519 (of Atl. oyster sterols)
PRP 30: 9 (re Salmonidae hooked snout development)
S 388, 432, 478, 486, 487, 516, 521, 533, 608, 634 (& nutrition of marine bacteria); **621, 622** (inositol in salmon); **733, 736** (of sugars in steelhead salmon)

Metals (*see* name of element; *also* Pollution; Toxicity)

Meteorology (*see* Weather; *also* Oceanography; Storms; Wind; *and* other cognate subjects)

Meter, current
J 16: 635 (use of Ekman)
S 454 (effect of ship's roll on Ekman)

Methanolysis (of glycerides)
B 89: 112 (process)
PRP 93: 3, **94:** 24 (for oil fatty acids identification)
S 479 (process); **687** (pilot plant for continuous); **688** (glycerol recovery)

Mexico
SS 669 (polychaetes)

Mexico, Gulf of
J 12: 754 (new sturgeon subspecies)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.: *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière: **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

M'Gonigle, Rowland Hillary
C 6: 315 (skate respiratory mechanism)
PRA 2: 20 (temperature re brook trout); **19**: 3 ("jellied" condition of swordfish)
S 44 (Atl. marine borers); **45** (*Teredo* distribution factors); **117** (fish culture temperature relations); **159** (3 Passamaquoddy Bay rare fishes); **217** (freshwater temperature characteristics); **243** (salmonoid fingerlings catarrhal enteritis)
SS 498 (algae re hatchery mortality); **654** (hatchery disease control)

Mice (*see* Mouse)

Michigan, Lake (*see also* Great Lakes)
J 17: 517 (*Mysis* migration)
PRC 1: 3 (sea lamprey incidence & effect)

Micrococcus (*see also* Bacteria)
PRP 96: 11 (indigenous to marine forms)

Microgadus proximus (*see* Tomcod, Pacific)

Microgadus tomcod (*see* Tomcod, Atlantic)

Micromesistius poutassou (*see* Whiting, blue)

Microorganisms (*see* kinds of, e.g. Bacteria; Flagellata; Moulds; Plankton; Protozoa; Yeasts)

Micropogon undulatus (*see* Croaker, Atlantic)

Micropterus dolomieui (*see* Bass, smallmouth)

Micropterus salmoides (*see* Bass, largemouth)

Microsporidia
SS 813 (in capelin)

Microstomus pacificus (*see* Sole, Dover)

Midges (*see* Chironomidae)

Midshipman (*Porichthys notatus*)
C 1: 294 (spawning)
B 68: 336, **68R**: 398 (full description)
PRP 79: 35 (in cod feed)
S 290 (B.C. records)

Migicovsky, Bert Baruch
SS 1174 (fatty acid inhibition of cholesterol synthesis)

Migration; Dispersal; Movement (*see also* **Behaviour; Biochemistry [re sockeye salmon]; Distribution; Guiding; Homing; Marking; Repellents; Tagging; Speed of swimming;** *also* **subjects listed under heading Reactions;** *also* **names of organisms)**
C 1914–15: 115 (eel); **1915–16**: 43 (coho salmon); **1921**: 106 (Pac. herring); **1**: 7 (lumpfish), 455 (starfish); **3**: 145 (*Littorina*), 170 (*Buccinum*), 265, **4**: 453, 471 (Pac. salmons); **5**: 3, 37, 55, **8**: 346 (sockeye salmon); **6**: 184 (whitefish fry), 241 (haddock); **8**: 433 (Atl. cod)
J 1: 159, **2**: 391, **4**: 1, 96, 323, **5**: 485, **6**: 311, 399, **7**: 432, **11**: 362, **13**: 219, **17**: 453 (Atl. salmon); **1**: 269, **20**: 305 (lobster); **2**: 311, **3**: 26, 421, **4**: 184, 192, **6**: 483, **7**: 88, **8**: 103, **9**: 304, **12**: 362, **15**: 391, 787, **16**: 235, 421, 559, **17**: 295, 655, **18**: 311, **19**: 137, 1025, **20**: 287, 919, 1457, **21**: 995, 1227 (sockeye salmon); **2**: 383, **3**: 403, **4**: 233, **8**: 241, **9**: 304, 450, **12**: 362, 369, **13**: 309, **15**: 391, 787, **16**: 857, **17**: 295, **18**: 337, **21**: 995, 1227 (pink salmon); **6**: 158, 217, **8**: 164, 241, **9**: 304, **10**: 293, **11**: 107, 310, 472, **12**: 362, **15**: 391, **17**: 295, 655, **19**: 137, 1047, **20**: 287, **21**: 995 (coho salmon); **6**: 158, **9**: 304, **10**: 548, **11**: 310, **12**: 362, **15**: 787, **20**: 287, **21**: 995 (chinook salmon); **8**: 164, 241, **9**: 304, 450, **12**: 362, 369, **13**: 309, **15**: 391, **16**: 857, **17**: 295, 655, **21**: 995, 1227 (chum salmon); **8**: 374 (B.C. bottom fishes); **4**: 349, **10**: 1, **15**: 1329, **18**: 221 (Atl. herring); **4**: 69, 491, **5**: 176, 258, 471, **6**: 245, **10**: 548, **11**: 550, **12**: 210, **14**: 687, **15**: 1403, **16**: 247, 695, **19**: 173, 201, **20**: 327 (various trouts); **5**: 84 (starfish); **5**: 164, **20**: 685 (plankton); **6**: 164 (pilchard); **7**: 417, **16**: 283, 309 (Pac. herring); **10**: 326 (arctic char), 459 (lemon sole); **11**: 351 (Atl. dogfish); **12**: 85 (Pac. albacore), 147 (smallmouth bass: correction on **12**: 942), 238, **20**: 1523 (eels); **13**: 599 (maskinonge); **14**: 953 (petrale sole); **15**: 1269, **21**: 837 (Atl. halibut); **15**: 1313 (Atl. smelt); **16**: 247, **20**: 1001 (shiners); **17**: 515 (*Mysis*); **18**: 513 (Pac. cod); **19**: 445, **21**: 215, 429 (Atl. cod); **19**: 815 (gray whale), 1025 (respiratory metabolism for energy), **20**: 287 (cues from retinal images), 319 (Great Slave L.), 551 (winter flounder), 587 (brook stickleback), 855 (haddock), 1267 (pollock); 1397 (bigmouth buffalo)

B 14, 31, 66, 74, 86, 101: 33, **114** (pink salmon); **14, 31, 114** (chum salmon); **15, 40, 86, 101**: 34, **113, 114** (coho salmon); **16, 86, 101, 106, 114, 117** (sockeye salmon); **21**: 6, **51, 57**: 12 (Atl. salmon); **25**: 9 (haddock); **26, 27, 41, 86, 101**: 35, **113, 114** (chinook salmon); **62**: 16 (Dungeness crab); **79**: 6 (Man. brook trout); **98** (beluga); **105**: 68 (Atl. cod); **118**: 70 (E arctic ringed seal); **120** (redfish); **130**: 10 (swordfish); **143**: 9 (Pac. herring); **144** (American smelt); **146** (Pac. fur seal, sea lion & harbour seal)

PRA 22: 3, **26**: 8, **28**: 14, **29**: 6, **35**: 8, **64**: 10, **67**: 6, **72**: 8 (Atl. cod); **28**: 4 (starfish); **28**: 9, **64**: 10 (haddock); **35**: 16, **43**: 9 (brook trout); **37**: 14 (oyster drill); **50**: 3, **61**: 4 (Atl. halibut); **50**: 17 (softshell clam); **64**: 3, **69**: 12 (lobster); **70**: 10 (Atl. herring), 28 (spiny dogfish)

PRP 2: 5, **8**: 6, **62**: 4, **65**: 77, **70**: 13, **75**: 40, **78**: 6, **82**: 9 (adult sockeye salmon); **2**: 7, **9**: 7, **49**: 6, **51**: 3, 8, **62**: 14, **90**: 21 (adult coho salmon); **3**: 8, **9**: 12, **15**: 10, **34**: 8, **48**: 13, **57**: 8, **58**: 8 (adult pink salmon); **3**: 9, **9**: 12 (adult chum salmon); **4**: 11, **8**: 15, **90**: 21 (adult chinook salmon); **4**: 3, **23**: 16, **27**: 8, **31**: 11, **35**: 3, **37**: 3, **39**: 5, **41**: 10, **45**: 14, **55**: 4, **59**: 3 (Pac. herring); **10**: 5, **41**: 6 (pink salmon fry); **11**: 18, **22**: 21, **89**: 84 (Dungeness crab); **31**: 7, **35**: 9, **38**: 18, **64**: 51 (pilchard); **42**: 20, **57**: 3 (lingcod); **53**: 12, **92**: 20 (dogfish); **64**: 64 (soupfin shark); **67**: 31 (various interesting tagged fish migrations); **68**: 48, 51, **72**: 24, **73**: 68, **85**: 75, **104**: 11 (lemon sole); **70**: 20 (chum salmon fry); **72**: 36 (harbour seal); **77**: 105, **79**: 33, **93**: 6, **97**: 10 (various Pac. salmon fry species); **78**: 6, **80**: 55 (sockeye fry); **106**: 24 (young Pac. salmon during early ocean residence); **107**: 3 (plankton); **112**: 6 (hormone role in sockeye spawning migration)

CJG 2 (redfish); **3** (Atl. cod)

CNG 68 (B.C. whales, dolphins & porpoises)

CSG 24 (lobster)

NRB 1: 66, **12** (Atl. salmon); **8** (lobster); **14**: 9 (Atl. cod); **15**: 55 (spiny dogfish)

NSB 15: 10 (lobster)

S 42, 67, 356 (sockeye); **131** (brown trout); **164** (lobster); **165, 168, 187, 192, 256, 269, 270, 275, 291, 298, 333** (Atl. salmon); **171, 193, 221, 240, 247, 254, 260, 285, 327, 343, 363, 446** (B.C. herring); **196, 220, 239, 246, 253, 261** (pilchard); **287, 268, 721, 862** (pink salmon); **293** (European fishes); **300** (problems re Atl. fishes); **321** (P.E.I. speckled trout); **322** (coho & chinook salmon); **356** (sockeye salmon re high dams); **435** (P.E.I. trout); **600** (birds of Foxe Basin, N.W.T.); **791** (NW Atl. cod stocks)

SS 166 (marine animals); **204, 366, 671, 991** (Pac. salmons); **223, 240, 568** (sockeye salmon parent stream theory); **224** (young sockeye); **266** (mackerel); **459, 499** (rainbow trout); **853, 1331** (Atl. salmon); **991** (control & timing of Pac. salmons); **1172, 1379** (lobster)

Mild curing (*see* Marinating; Smoking)

Milk

S 840 (fatty acids of Atl. gray seal)

"Milky" condition of flesh

J 21: 335 (caused by myxosporidian parasite)

PRP 105: 11 (lemon sole: caused by *Chloromyxum* myxosporidian)

Millar, Frederick Graham

J 9: 329 (Great Lakes surface temperatures)

Miller, F. R.

C 1906–10: 277 (lobster intestine physiology)

SS 39 (anal rhythm in crayfish & lobster)

Miller, Frances Harkness

J 19: 365 (trout diet, glycogen, fatigue)

Miller, Richard Birnie

J 6: 334 (*Triaenophorus* re whitefish & tullibee growth); **7**: 176 (Great Bear L. lake trout), 190 (N Canadian lakes pike); **11**: 550 (cutthroat trout stream behaviour); **13**: 135 (small whitefish industry collapse & recovery); **14**: 687 (cutthroat home territory), 797 (possible factors re freshwater fishes genetic pattern alterations); **15**: 27 (trout hatchery mortality & competition effect; correction on **16**: 386); **16**: 321, **19**: 365 (hatchery rainbow trout fatigue resistance)

B 72: 31 (Great Bear L. fisheries survey); **95** (Canadian *Triaenophorus* problem review)

SS 815 (Great Bear L. arctic grayling); **816** (sculpin colour change)

J 16: 387 (obituary of)

Miller's thumb (*see* Sculpin, slimy)

Mills, Derek Henry

J 14: 729 (lobster predation by gulls & terns)

Milne, Donald Johnston

J 12: 451 (Skeena R. salmon fishery)

B 86 (salmon hazard at Moricetown Falls, B.C.); **113** (chinook & coho salmon tagging review); **142** (chinook & coho salmon fisheries)

PRP 75: 46 (Skeena R. sockeye salmon run); **80**: 50 (Skeena R. salmon tagging); **85**: 80 (coho salmon growth differences); **91**: 28 (NW Vancouver Is. coho run); **103**: 3 (trolling lures selectivity); **106**: 10 (young salmon mortality after catching for tagging); **111**: 14 (chinook & chum salmon tagging); **112**: 7 (food factor in coho growth)

CNG 14 (Skeena R. salmon catch predictions, 1948)

SS 999, 1162 (B.C. troll fishery)

J 20: 239 (obituary of)

Milt (*see also* Gonads; Sperm; Testes)

J 7: 513 (amino acids of B.C. herring & salmon)

PRP 52: 3, 19 (re herring canning); **63**: 38 (in salmon paste); **71**: 5 (use of protamine from); **73**: 50, **77**: 97 (amino acids of salmon & herring); **80**: 47 (yield & uses, from salmon cannery waste); **80**: 52 (in salmon hatchery feed)

CVI 11 (essential amino acids in salmon & herring); **16** (by-products from salmon)

S 607 (phosphorylribose enzyme in lingcod); **818** (traced incorporation of N bases into deoxyribonucleic acid of); **849** (synthesis of mononucleotides with aid of salmon)

Minas Basin and Channel, N.S. (*see also* Bay of Fundy)

S 587 (marine fauna)

Mineral constituents (*see also* Composition, chemical; Nutritive value; Sea water; *also* under names of individual elements, fishery products, and other cognate subjects)

C 1921: 125 (lobster)

J 2: 469 (Pac. salmon & pilchard), 473 (coho salmon); **10**: 283 (plankton)

PRA 49: 5 (cod liver residue)

PRP 41: 7 (canned salmons); **53**: 9, **57**: 11 (various fresh & processed marine products); **55**: 13 (clam nectar); **97**: 18 (requirements for marine bacteria growth); **103**: 16 (solubles from shrimp wastes)

CVG 26 (B.C. whole herring meal)

SS 16 (jellyfishes); **69** (marine protoplasm)

Mink

B 59: 319, **89**: 281 (fish vitamin oils in feed); **92** (effect of fish in rations)

PRP 111: 20 (B.C. landings of trawled fish for feed)

S 851: 41 (B.C. landings of trawled fish for feed)

SS 979 (antibiotics in feed)

Minnow, bluntnose (*Pimephales notatus*) (*Hyborhynchus notatus*)

C 1911–14(II): 21 (Lake Huron)

J 16: 147 (associations in Ont. streams)

S 445 (lethal temperature limits); **448** (Man. northern limit); **481** (Man.)

Minnow, brassy (*Hybognathus hankinsoni*)

J 13: 766, **14**: 656 (B.C. distribution); **16**: 147 (associations in Ont. streams)

S 448 (Man. northern limit)

SS 1208: 129 (full description)

Minnow, fathead (*Pimephales promelas*) (*Hyborhynchus promelas*)

J 16: 147 (associations in Ont. streams)

S 445 (lethal temperature limits); **448** (Man. northern limit)

Minnow, fine-scale (*see* Dace, finescale)

Minnow, northern (*see* Dace, northern pearl)

Minnow, salt water (*see* Mummichog)

Minnow, silver-gray (*Apocope falcata*) (*see also* Dace, leopard)
B 56: 38 (Okanagan L., B.C.)
S 144: 69 (B.C. distribution)

Minnow, silvery (*Hybognathus nuchalis*)
S 481 (doubtful Man. records)

Minnows (*see also* Killifish, banded; Mummichog)
B 94: 18 (Canadian Arctic & Subarctic Cyprinidae)
PRP 19: 3, **36:** 3 (as squawfish & salmon feed)
S 144: 69 (*Apocope nubila* in B.C.); **448** (Man. northern limits)

Miramichi River, Bay and Estuary, N.B.
C 1917–18: 149, 169 (diseased Atl. salmon); **1918–20:** 181 (new algae)
J 1: 159 (Atl. salmon); **12:** 351 (estuarial physical hydrographic features); **15:** 1313 (smelt growth); **16:** 807 (list of fishes); **19:** 625 (salmon & trout observations)
B 70 (smelt)
PRA 2: 18 (triennial big salmon catch); **62:** 17 (DDT forest spraying effect on salmon); **65:** 3 (oyster mortalities)
CSG 38, 42 (mining pollution survey)
S 336 (Greenland cod); **398** (recent salmon research); **399** (black salmon angling effect); **739** (smelt fishery)
SS 799 (fisheries investigation); **1145** (transplanting insects to DDT-sprayed areas)

Mirougna angustirostris (*see* Seal, elephant)

Mispec River, N.B.
PRA 6: 7 (earliest salmon run)

Mites (Acarina)
J 11: 267, **13:** 489 (in marine mammals)

Mixing and stratification in natural waters (*see also* Oceanography)
J 1: 133 (tank experiments), 171 (St. John R. with Bay of Fundy), 227 (Atl. surface with southern N.S. coastal); **2:** 141 (Bay of Fundy); **14:** 221 (western Atl.), 241, 423 (Strait of Georgia), 487, 605 (B.C. inlets), 731 (Canadian Archipelago waters), 945 (Hecate Strait region); **15:** 115 (Bay of Fundy tidal energy system), 443 (effect on heat budget of sea), 1252 (in Laurentian Channel)
B 134 (Canadian Atl. waters)
PRP 108: 3 (Strait of Georgia)

Mixture of stocks
J 15: 991 (effect on fishery yield)

Moberg, Erik G.
SS 477 (chemical oceanographic data reporting)

Models, hydrographic
J 1: 133 (mixing & stratification tests); **15:** 775, **20:** 1197 (of Hecate Strait, B.C.)
B 83: 76, 142 (Aberni Harbour, B.C., re pulpmill effluent)
PRP 76: 66 (Alberni Inlet re pulpmill effluent disposal)
CPO 1960-17, 1961-22, -23, 1962-1 (Hecate Strait)
S 684 (Hecate Strait); **857** (stilling well design)
SS 931 (Alberni Harbour)

Models of equipment
PRP 67: 35 (smoke tunnel)

Models, statistical or computational
J 13: 613 (re fishery yields); **17:** 91 (analogy to, in subarctic Pac.); **20:** 939 (seawater structure, W coast Vancouver Is.)
S 642 (Alberni Inlet & Juan de Fuca Strait); **812** (re fishery regulations effects on catch)
SS 1311 (estuarine, of subarctic Pac. waters)

Modiola modiolus (*see* Mussel, horse)

Modiolus demissus (*see* Mussel, ribbed)

Moffett, James William
SS 1277 (sea lamprey larvicide)

Moisture determination
PRA 47: 5, **52:** 22, **53:** 8, **60:** 15, **62:** 3 (re salt cod & haddock)
PRP 33: 20 (in canned salmon, for inspection); **74:** 26 (apparatus, for fishery products); **77:** 112 (comparison of methods)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ., **NRB, NSB** Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

CHN 16 (for excessive flesh moisture)
S 685 (for fish blocks from frozen cod)

Mola mola (*see* Sunfish, ocean)

Molds (*see* Moulds)

Mollusca (*see also* classifications, e.g. Bivalves; Chiton; Clam; Gastropoda; Mussel; Nudibranchiata; Oyster; Pteropoda; Shipworm; Whelks; etc.)
C 1906–10: 41 (Malpeque, P.E.I.), 54 (Gaspé, Que.), 69 (Maritimes); **1911–14 (I)**: 43 (Passamaquoddy Bay, N.B.); **1911–14(II)**: 95 (Georgian Bay, Ont.); **1914–15**: 145 (southern N.B.); **1917–18**: 243 (Canadian); **1**: 132 (Quill lakes, Sask.)
J 9: 164 (vitamin B_{12}); **11**: 706 (parasitic, of B.C. freshwater fishes); **16**: 162 (associated with Ont. stream fishes); **21**: 1155 (species introduced into B.C.)
PRA 32: 8 (N.S. survey)
S 16 (crystalline style role in respiration); **245** (B.C. edible); **496** (removing bivalves intact from shell); **517** (review of sterols in); **587** (Minas Basin & Channel); **623** (arctic); **844** (sperm deoxyribonucleic acids)
SS 203 (B.C. new species); **209, 210** (new wood-boring)

Molnár, Gyula
J 19: 1005 (largemouth bass digestion re temperature)

Molva byrkelange (*see* Ling, blue)

Molva molva (*see* Ling, European)

Molybdenum compounds
J 16: 7 (in Atl. coastal seawater); **20**: 229 (in B.C. whole herring meal)

Monacanthus ciliatus (*see* Filefish, fringed)

Monacanthus hispidus (*see* Filefish, planehead)

Monkfish (*Lophius americanus*) (allmouth; angler; goosefish; fishing frog)
C 1902–05: 90 (Cape Breton, N.S.), 91 (trematode parasites); **1921**: 113 (development); **4**: 143 (taxonomy; development)
J 7: 96 (thiaminase in); **14**: 859 (nematodes in); **16**: 513 (P.E.I. inshore records), 828 (Miramichi estuary, N.B.); **20**: 679 (tissue explant cultures)
B 3 (description); **7**: 5 (insulin in); **89**: 29, 69, 347 (liver oil characteristics); **155**: 420 (full description)
PRP 58: 13 (liver oil)
S 17: 17 (insulin in); **79**: 6 (light effect on hatching)
SS 594 (description)

Monodon monoceros (*see* Narwhal)

Monomethylamine
J 6: 368 (production in fish spoilage)

Monstrosities (*see* Abnormalities)

Montague River, P.E.I.
PRA 38: 3 (brook trout angling yield)

Moon (lunar cycle effects) (*see also* Light, reaction to; Tides)
J 4: 298 (re oyster spawning); **7**: 363 (re *Odontosyllis* spawning)
PRA 3: 5 (re mussel edibility)
PRP 38: 10 (re B.C. herring fishery)
S 215 (re rainbow trout angling)
SS 752 (re trout fishing)

Mooneye (*Hiodon tergisus*)
S 357 (Lake Winnipeg); **481** (Man.)
SS 838 (Sask. occurrences)

Moonfish (*see* Lookdown, Atlantic)

Moonfish (Pacific) (*see* Opah)

Moonfish, Atlantic (*Vomer setapinnis*) (bluntnose; horsefish) (*see also* Lookdown, Atlantic; Opah)
J 16: 510 (N.S. record)
B 155: 253 (full description)

Moore, Leonard Patrick
C 7: 413 (pilchard oil decolorization)

Moorehouse, Victor Henry Kingsley
C 7: 465 (noise reactions of fish)
PRP 13: 14 (fish conditioning to noise)

Moorjani, Madhow Naraindas
J 16: 1 (antibiotic for fish quality in India); **17**: 475 (iced India shrimp spoilage)

Moose (*Alces alces*)
S 572 (age from teeth)

Mopping
PRA 28: 5 (to remove starfish from oyster beds)
COF 7 (for starfish removal)

Moray, green (*Gymnothorax funebris*)
J 16: 507 (Halifax Harbour)
B 155: 158 (full description)

Morgan, A. R.
SS 1378 (spawning Dover sole tagging results)

Moricetown Falls, B.C.
B 86 (salmon migration hazard)

Morone americana (*see* Perch, white)

Moroteuthis robusta (*see* Squid)

Morphology, animal (The following list of references is not exhaustive; *see also* Histology; Meristic characteristics; Morphometry; Variation, morphological; *and* other cognate subjects; *also* names of animals and their organs and tissues)
C 1901: 20 (*Mya*), 55 (mackerel shark); **1906–10:** 277 (lobster); **7:** 477 (elasmobranch viscera); **8:** 207 (*Raja* arteries)
J 1: 239, 261 (*Raja* nerves; claspers), 469, **10:** 76 (barnacles nervous system); **2:** 209 (*Chironomus*); **5:** 347 (Pac. herring); **6:** 140 (*Paphia*), 209 (Atl. oyster), 419 (*Themisto*); **7:** 505 (*Sarcotaces*); **11:** 107 (nares of fishes), 130 (ear of fishes), 652 (hybrid char), 904, **18:** 793 (chars); **12:** 97 (whale helminths), 121 (whale-lice), 143 (folliculinid ciliates), 593 (Chaetognatha), 742 (Kamloops trout), 754 (sturgeons), 858 (plankton copepods), 899 (echinoderms); **15:** 815 (salmon eye); **16:** 903 (cutthroat trout); **18:** 679 (grayling & other salmonoid bones), 1125 (lamprey teeth); **19:** 1013 (Lake Erie *Leucichthys* species), 1161 (adipose eyelid); **20:** 1089 (geographical differences in immature *Triaenophorus*)
B 1: 20 (plaice scales); **7:** 9 (anglerfish viscera); **68:** 8, **68R:** 15 (B.C. marine fishes: general); **136** (Pac. salmons osteology); **155:** 13 (Canadian Atl. marine fishes: general)
NRB 2 (Atl. capelin)
S 1 (Isopoda); **2** (Argulidae); **4** (shrimps); **35** (lymphoid organ, spleen, etc., of shark); **36** (lamprey velar apparatus); **39** (Chirodotea); **53** (ratfish brain); **78** (ascidians); **99** (skate pancreas); **100** (scallops adductor muscle); **169** (hermit crabs); **199** (Polychaeta anterior setae); **223** (Atl. salmon thyroid gland); **231** (coho salmon fry); **549, 550** (dinoflagellates); **599** (*Phocanema decipiens*); **798** (genetic factors in dinoflagellates taxonomy)
SS 65 (ascidian); **112** (cestode); **116** (Atl. herring); **488** (pilchard); **701** (kokanee; Kamloops trout); **731** (trout head lengths re environment); **814** ("reversed" winter flounders); **870** (*Myriochele heeri*); **890** (fishes environment effect on); **1009** (trematode); **1263** (re Pac. salmons environment & heredity)

Morphology, terrestrial (*see* Physiography)

Morphometry (The following list of references is not exhaustive; *see also* Morphology; Size; Variation, morphological; *and* other cognate subjects; *also* names of organisms)
J 12: 93 (parasitized vs. non-parasitized sockeye salmon smolts), 754 (sturgeons), 768 (inconnu), 781 (Ungava Bay fishes), 930 (burbot); **13:** 842 (arctic char); **14:** 573 (kokanee); **17:** 647 (mutant & normal pikes); **18:** 259 (Pac. salmon eyes), 793 (chars), 1167 (smoothtongue); **21:** 863 (porbeagle), 865 (blue shark), 1129 (Greenland halibut), 1339 (*Cottus bairdii* vs. *C. cognatus*)
B 68, 68R (B.C. marine fishes); **155** (Canadian Atl. marine fishes); **118** (ringed seal)
SS 161 (Dungeness crab); **216** (ascidian test); **405** (rainbow trout scales); **512** (re fish taxonomy); **533** (Pac. salmons); **840** (landlocked vs. anadromous Atl. salmon)

Morrhua ductor (*see* Cod, Greenland; Cod, pilot)

Morris, Robert J.
C 1: 439 (identification of northern fishes collected by him)

Morrison Lake, B.C. (*see* Skeena River drainage system lakes)

Mortality, fishing (*see* Abundance; Exploitation)

Mortality in shipping live animals
C 1911–14(1): 73 (freezing mummichog)
B 33 (lobster); **34** (Pac. oysters); **44, 60:** 63, **131:** 123 (Atl. oyster)
PRA 6: 10 (lobster)
PRP 106: 6 (Dungeness crab)

Mortality, natural, accidental or total (*see also* Exploitation; Lethal limits; Mortality rate; Predators; Survival; *and* other cognate subjects; *also* names of organisms)
C 1918–20: 29 (B.C. marine organisms in severe winter); **2:** 135, **5:** 203 (trout fry); **2:** 245 (shad); **3:** 367 (trout); **5:** 361 (*Enchelyopus*); **6:** 180 (whitefish eggs)
J 3: 26, **4:** 184, **8:** 103, **11:** 339 (sockeye salmon); **5:** 43 (theory), 84 (starfish), 172 (salmon-lice), 476 (stream fishes by heat); **7:** 224, **9:** 450, **21:** 1385 (pink salmon); **8:** 383, **11:** 827, **12:** 210 (trouts); **8:** 479, **12:** 187 (flounders; correction on **12:** 942); **9:** 450, **15:** 229 (chum salmon; correction on **16:** 386); **10:** 293, **16:** 429 (coho salmon); **10:** 413, **11:** 298 (whitefish); **11:** 362, **20:** 827 (Atl. salmon); **12:** 649, **15:** 909 (B.C. herring; correction on **14:** 997); **12:** 781, **15:** 1189, **20:** 451 (scallops); **13:** 599 (maskinonge); **15:** 27 (wild & planted trout; correction on **16:** 386); **15:** 749 (estimating); **16:** 95, 429, **17:** 199 (chinook salmon); **20:** 435 (Atl. herring from epizootic), 497 (discards of fish at sea); **21:** 773 (pre-natal in fur seals)
B 1: 25 (plaice); **5:** 8 (lobster); **60:** 38, 74, **131:** 93 (Atl. oyster); **101, 107** (Pac. salmons as result of rockslide); **113** (coho & chinook salmon as result of tagging); **128:** 20 (clams by mechanical harvesting)
PRA 37: 10 (lobster); **62:** 17, (Atl. salmon & insects from DDT spray), 30 (Atl. herring); **65:** 3 (Atl. oyster)
PRP 8: 6 (spawning Skeena R. salmon); **10:** 10 (in sockeye salmon pond retention); **15:** 7 (trout furunculosis); **31:** 19 (tagged Pac. herring); **46:** 14 (sudden, of Pac. salmon); **48:** 3, **64:** 51 (pilchards); **52:** 11 (sudden, of Pac. herring); **53:** 16, **111:** 19 (herring eggs); **65:** 70 (sudden, of lake fish); **70:** 20 (chum salmon eggs); **88:** 72 (pink salmon from drought); **106:** 10, **111:** 13 (young salmon caught for tagging); **109:** 3 (sudden, of harbour fishes); **111:** 3 (during explosion of Ripple Rock, B.C.)
CNG 18 (mass mortality of Chatham Sound, B.C., herring)
COF 16 (1941 failure of Atl. oyster spatting)
CSG 27 (Atl. oyster)
S 40 (marine animals); **251** (rainbow trout); **283, 648** (P.E.I. oyster disease); **289** (Atl. salmon); **292** (natural vs. fishing); **293** (European investigations of); **294** (Pac. salmon); **295** (young sockeye); **296** (survey of); **340** (re predators; correction on **J 12:** 941); **359** (effect on population); **364** (Pac. herring & halibut); **484** (re useable stocks); **813** (Pac. oyster seed); **842** (as result of marking fish)
SS 498 (by algae in hatcheries); **551** (hooked seeds kill trout); **780** (re yields); **781** (Great Lakes smelt); **1024** (young Pac. herring at sea)

Mortality rate (*see also* Mortality)
J 15: 749 (estimating natural & fishing), 831 (estimate for lingcod; correction on **16:** 386); **15:** 1371 (cod & haddock); **16:** 73 (errors in estimates of); **18:** 513, **21:** 1051 (Pac. cod); **18:** 645 (comparison of estimation methods); **19:** 159 (method of estimating from change in population composition), 315 (effect of tag failure on estimate of), 521 (effect of reduction of fishing mortality on yield), 531 (sockeye salmon during their last 2 years), 561 (estimations for Pac. salmon during ocean life); **20:** 195 (*Tilapia esculenta* of Lake Victoria, Africa), 265 (whitefish); 834 (application of Paloheimo linear equation), 1213, **21:** 727 (maskinonge); **20:** 1371 (sockeye salmon); **21:** 477 (compensatory & depensatory types), 905 (re ocean growth of pink & chum salmon), 1019 (sea mortality of pink salmon)
B 119 (re computations for biological statistics; *see* its index); **139:** 48, 55 (Pac. cod & lemon sole)
PRP 64: 51 (pilchard)
CAG 2 (walrus)
S 294 (in ocean); **853** (Gulf of St. Lawrence cod)
SS 614 (sockeye salmon during life cycle); **857** (Pac. salmons eggs); **858** (pink salmon at sea); **1077** (finback whales)

Mortensen, Th.
SS 202 (crinoid development); **221** (echinoderms larvae & development)

Mortimer, Joan Elizabeth
PRA 71: 27 (introducing European oysters to Maritimes)

Morton, Betty Helen (*see also* McKercher, Betty Helen)
J 6: 326 (dogfish liver oil glycerol yield)
PRP 58: 13 (B.C. fish liver oil unsaponifiables); **61**: 6 (B.C. flatfishes liver & visceral oils)

Morton, Margaret Louise
J 13: 47 (frozen oyster storage), 129 (frozen plaice fillet storage), 569 (frozen redfish fillet storage)

Moser River, N.S.
J 5: 176 (sea-running brook trout)

Mosher Lake, Sask.
B 95: 33 (cisco control)

Mosquitofish (*Gambusia affinis*)
S 445 (lethal temperature limits)

Moss, Irish (*see* Irish moss)

Mossbunker (*see* Menhaden, Atlantic)

Mossop, Bessie Katharine Elizabeth
C 1921: 15 (Atl. mussel)
S 15 (mussel growth rate)
SS 163 (starfish hybridization)

Mother-of-eels (*see* Pout, ocean)

Mottley, Charles McCammon
C 4: 471 (tagged chinook salmon scales); **8**: 253 (Kamloops trout scale development)
J 2: 359 (Kamloops trout biometry); **3**: 169 (trout vertebrae number); **4**: 69 (rainbow trout spawning fluctuations)
PRP 7: 9, **13**: 8 (Kamloops trout); **8**: 11 (temperature re trout propagation); **11**: 10 (trout propagation in B.C. interior); **19**: 11 (stream & lake trout in southern B.C.); **26**: 3 (white vs. black ponds for fish culture); **27**: 3 (B.C. rainbow trout classification); **30**: 9 (Salmonidae hooked snouts)
S 131 (brown trout introduction into B.C.); **141** (salmonid game fish culture); **163** (Jones L., B.C., biological survey); **214** (spawning rainbow trout weight loss); **215** (moon re rainbow trout fishing); **230** (rainbow trout production); **249** (rainbow trout biometrics); **250** (rainbow trout stock vs. size & condition)
SS 405 (temperature re trout scale count); **406, 596** (Kamloops trout); **434** (trout propagation, Kamloops region, B.C.); **459** (rainbow trout spawning migration); **499** (role of vision in trout spawning migration); **500** (rainbow trout origin & relations); **596, 655** (rainbow trout species nomenclature); **621** (errors in estimating weight of fish in a pond); **752** (full moon effect on trout fishing)

Mottley, Jean Cranston
PRP 13: 8 (Kamloops trout feed)

Moulds (*see also* "Dun")
J 6: 303 (on dehydrated fish products); **7**: 104 (chemical preservatives for combatting), 128 (from live Atl. cod)
PRP 57: 16 (on dehydrated fish); **59**: 7 (preventative spray for vessel holds)
S 417 (inhibition in smoked fish)

Moulting
J 6: 152 (lobster)
B 5: 6, **43**: 11 (lobster); **30**: 17 (crabs)
CSG 24 (lobster)
NRB 18: 12 (lobster)
NRS 15: 24 (lobster)
SS 164 (planktonic copepods)

Mounce, Irene
C 1: 39, 81 (Strait of Georgia oceanographic biology)
SS 160, 206 (swelled canned sardine bacteriology); **501, 502** (a new *Ophiobolus* on eel grass)

Mouncey, Yvonne Adelaide
J 6: 359 (amine development during fish spoilage)

Mountain-sucker, northern (*Pantosteus jordani*) (plains mountain-sucker)
J 14: 654 (B.C. distribution)
SS 1208: 94 (full description)

Mouse, albino (Used for several types of biological assays similar to those listed under Cat *and* Rat, albino; *which see*)

Mouse, red-backed (*Evotomys*)
PRP 74: 9 (predation by Dolly Varden)

Mouse, sea (*see* Sea mouse)

Mousetrap
C 6: 372 (re paint-drying tests)
S 648: 453 (oyster as)

Mouth (*see also* Jaw; Teeth)
SS 64 (origin of ascidian)

Movements of animals (*see* Marking; Migration; Tagging; *also* subjects indicated under the heading Reactions of organisms; *also* names of organisms)

Moxostoma anisurum (*see* Redhorse, silver)

Moxostoma aureoleum, M. macrolepidotum (*see* Redhorse, northern)

Moxostoma valenciennesi (*see* Redhorse, greater)

Moyer, Rudolph Henry
J 16: 791, **17**: 811 (dogfish flesh keeping quality)
PRP 110: 16 (fish preservation with antibiotics); **112**: 21 (incorporating CTC antibiotic in ice blocks from hard waters)
CVG 23 (packaging frozen fish)

Mozley, Walter Alan
SS 300 (plankton of a Man. lake)

Mud (*see* Sediments; Silt; *also* names of bottom organisms)

Muddler, northern (*Cottus bairdi*) (mottled sculpin)
J 16: 147 (occurrence & associates in Ont.), 825 (Miramichi estuary, N.B.); **19**: 989 (furunculosis carrier); **21**: 1339 (distinguished from *C. cognatus*)
S 357 (Lake Winnipeg region); **481** (Man.)

Muddler, spoonhead (*see* Sculpin, spoonhead)

Mudge, Cape, Lightstation, B.C. (*see also* Lighthouse oceanographic stations, B.C. coast)
PRP 90: 16, **94**: 8, **98**: 6 (daily seawater data)

Mudminnow, central (*Umbra limi*)
C 1911–14(II): 34 (Lake Huron); **2**: 148 (SW Ont.)
J 16: 147 (associations in Ont. lakes); **19**: 979 (prey of pickerel)

Mudminnow, eastern (*Umbra pygmaea*)
J 19: 979 (association with redfin pickerel)

Mugil cephalus (*see* Mullet, striped)

Muir, Barry Sinclair
J 17: 919 (maskinonge comparative growth rates); **20**: 839 (Paloheimo linear equation for estimating mortalities), 1213, **21**: 727 (maskinonge vital statistics)

Muirhead, Christopher Robert
CVI 20 (whale carcass preservation with antibiotics)
S 466 (bacterial spoilage antibiotic control)

Mukerji, Girindra Nath
J 18: 1125 (lamprey infraoral lamina)

Mulhaden (*see* Alewife; Herring, blueback)

Mullan, Maurice Wendell
J 20: 1231 (effective fish-washing operations)

Mullet (in addition to following headings, *see* Buffalo, bigmouth; Redhorse, greater; Redhorse, northern)

Mullet, red (*see* Goatfish, red)

Mullet, striped (*Mugil cephalus*) (common mullet)
B 7: 20 (Langerhans islets tissue re insulin); **155**: 334 (full description)

Mullus auratus (*see* Goatfish, red)

Mummichog (*Fundulus heteroclitus*) (common killifish; salt water minnow)
C 1901: 12 (pollutant effect on); **1902–05**; 83 (N.S.), 91 (trematode parasite); **1911–14(I)**: 73 (revival after chilling); **7**: 45 (temperature effect on digestion)
J 7: 94 (thiaminase in muscle & viscera); **16**: 818 (Miramichi R.)
B 155: 173 (full description)
PRA 20: 6 (population in N.S. lakes)

S 57 (digestive function); **70** (bile enzymes); **234** (P.E.I.)
SS 302 (trematode ectoparasite)

Mummichog, freshwater (*see* Killifish, banded)

Munro, James Alexander
B 17 (waterfowl predation on B.C. herring & ova); **55** (merganser re B.C. fish population)
PRP 19: 3 (squawfish feed)
S 212 (B.C. merganser feeding habits); **224** (feed of ducks & coots); **227** (B.C. golden-eye waterfowl)
SS 328 (seagull re B.C. fishery); **435, 503, 597** (B.C. merganser feeding habits); **622** (birds re sockeye salmon propagation, Henderson L., B.C.); **732** (B.C. scaup ducks); **764** (B.C. mallard); **778** (B.C. pintail); **1402** (Lake Manitoba cormorants)

Murphy, Garth Ivor
J 17: 33 (estimating abundance from longline catches)

Murphy, John Francis
NSB 10 (simple fish-meal equipment)

Murray, Alan Roderick
PRA 68: 20, **70:** 16 (biology, survival & utilization of Nfld. salmon)
S 541 (electrofishing apparatus)

Murray, J. C.
C 1901: 18 (nail factory effluent analysis)

Murray, Joseph Francis
PRP 101: 17, **104:** 19 (Na & K in B.C. sea foods); **104:** 23 (rumen cellulose digestion aided by fishery products)
S 457 (factors affecting rumen cellulose digestion); **533** (Na re marine bacteria metabolism)

Murray, Roy Creelman
PRA 64: 3 (P.E.I. lobster growth); **69:** 12 (fall & spring lobster movements)

Murres (*see also* Guillemot)
J 12: 781 (feed habits, Ungava Bay)
B 17: 29 (as Pac. herring predator)
S 836 (Belle Isle Strait)
SS 1268 (*Uria* distribution, populations & biology in Nfld.)

Muscle (The following list is not exhaustive; *see* note under the heading Flesh, fish, *and* references under that heading; *also* Acids, amino; Actin; Actomyosin; Composition, chemical; Fillets; Juice; Morphology; Myosin; Physiology; Protein fractions; Proteins; Rigor; Quality; Trimethylamine; Tropomyosin; etc.)
C 1918–20: 185 (lobster flexor tendon); **3:** 437, 457 (immediate post-mortem changes in fishes), 467 (tensile strength); **4:** 95, 227 (decomposition of clam), 227 (autolysis & bacterial decomposition of lobster), 227, **6:** 1, **7:** 147, **8:** 123, 131 (haddock: autolysis; bacterial decomposition; soluble proteins; non-protein N fractions); **4:** 501 (death rate in skate); **6:** 341 (creatine in dogfish), 375 (thermal characteristics); **8:** 311 (denaturation by freezing), 531 (artificial horn from)
J 5: 411 (swelling & drip); **6:** 152 (moult cycle re P content of lobster); **7:** 608 (acid-soluble P compounds); **9:** 388 (water transfer during cod brining); **15:** 355 (haddock swim bladder); **16:** 63 (separation of extractives); **17:** 323 (composition of maturing coho salmon), 347 (histidine in sockeye salmon), 371, 603 (biochemistry of lingcod); **20:** 45 (physics & chemistry of rigor in lingcod red & white), 101 (proteins & species differences in Salmonidae), 181 (apparatus for measuring toughness), 187 (bound nucleotides of frozen lingcod), 909 (distribution of lipid, water-solubles, protein & moisture in cod), 1145 (glycolysis in lingcod during frozen storage), 1153 (composition of porbeagle red & white), 1183 (constituents of tuna after brine freezing & thawing); **21:** 367 (fatty acids of cod), 703 (seasonal variations in composition of cod), 813 (glycolysis in irradiated scallop), 857 (rigor mortis & adenosine phosphate in steelhead trout), 1035 (sterol, fat & unsaponifiable components of scallop), 1345 (evaluation of rancidity in lean fish), 1361 (anatomical & seasonal variations in rancidity of cod), 1371 (rancidity inhibition by bacteria in

cod), 1538 (glycolysis in rainbow trout & effects of anaesthesia)
S 31 (tensile strength of haddock, re smoking); **38, 52** (lactic acid in fish & crustacean); **63** (*p*H of haddock & other trawl-caught fish); **81** (creatine content of various fishes); **100** (scallop); **400, 607** (lingcod, etc. riboside hydrolases); **517** (review of biochemical constituents); **537, 539** (protein & non-protein N in spawning migratory salmon); **633** (myosin & actomyosin enzyme); **700, 832** (oxidation of fatty acids by); **725** (cold storage changes); **780** (electrophoresis)
SS 39 (crayfish & lobster anal); **276** (rigor mortis changes); **317** (shrimp musculature); **693** (decomposition estimation); **1198** (non-protein N in spawning migratory salmon)

Muskellunge (*see* Maskinonge)

Muskrat (*Ondatra zibethica*)
SS 506 (predation on pink salmon)

Mussel (*Elliptio complanatus*)
J 7: 94 (thiaminase in muscle & viscera)

Mussel, bay (Atlantic) (*Mytilus edulis*) (blue mussel)
C 1906–10: 230 (larvae recognition); **1921:** 15 (biology); **4:** 121 (light, temperature & exposure effects on growth)
J 2: 89 (ecology, Passamaquoddy Bay region); **7:** 96 (thiaminase in); **11:** 816 (new species of parasitic copepod in); **15:** 529 (predation by *Ocinebra* drill), 1355 (control of *Lunatia* drill); **19:** 101 (factors affecting toxicity, N.B.)
B 60: 54 (oyster bed competitor); **75** (occasional toxicity); **77:** 15 (Malpeque Bay, P.E.I., larvae)
PRA 3: 5 (seasonability re moon phase); **32:** 8 (Northumberland Strait survey); **63:** 3 (feed of green crab); **71:** 21 (resource & future prospects)
CFI 23 (canning)
CHO 32 (canning)
CNG 64: 26 (productive capacity)
MSP 2 (as cod bait)
S 15 (growth rate, N.B., N.S., Hudson Bay); **279** (P.E.I. green-gilled); **542** (Hudson Bay & Strait; Ungava Bay)
SS 119 (James Bay); **215** (light effect on growth); **560** (association & predators)

Mussel, bay (Pacific) (*Mytilus edulis*)
J 15: 529 (predation by oyster drill); **21:** 205 (parasitization by *Mytilicola orientalis*)
PRP 40: 11, **52:** 23, **112:** 10 (occasional toxicity)
CVI 17 (B vitamins)
S 245 (description & use)

Mussel, blue (*see* Mussel, bay (Atlantic))

Mussel, California (*Mytilus californianus*) (sea mussel)
J 21: 205 (parasitization by *Mytilicola orientalis*)
PRP 40: 11, **52:** 23, **112:** 10 (occasional toxicity)
S 245 (description & use); **619** (sterol biosynthesis)

Mussel, horse (*Volsella modiolus*) (*Modiola modiolus*) (red mussel)
B 75 (occasional toxicity)
PRA 32: 8 (Northumberland Strait survey); **71:** 21 (resource & future prospects)

Mussel, red (*see* Mussel, horse)

Mussel, ribbed (*Modiolus demissus*)
B 60: 55 (oyster bed competitor); **77:** 25 (description of larvae)
S 279 (P.E.I. green-gilled); **433** (new sterol in)

Mussel, sea (*see* Mussel, California)

Mussels, freshwater
C 1917–18: 75 (Ont. pearly)
SS 134 (proposed utilization)

Mussels, marine (in general)
B 77 (descriptions of larvae)
SS 101 (report on B.C. beds); **119** (James Bay)

Mustelus canis (*see* Dogfish, smooth)

Mutant (*see also* Abnormalities)
J 17: 647 (northern pike, Heming L., Man.)
SS 1298 (northern pike, Heming L., Man.)

Muttonfish (*see* Pout, ocean)

Mya arenaria (*see* Clam, softshell (Atlantic); Clam, mud (Pacific))

Mycoplana (bacteria)
PRP 96: 11 (indigenous to marine forms)
S 421 (oxidize propionic acid)

Myctophum affine, M. opalinum (*see* Lanternfish, metallic)

Myctophum californiense (*see* Lanternfish, bigfin)

Myctophum glaciale (*see* Lanternfish, glacier)

Myctophum humboldti (*see* Lanternfish, largescale)

Myctophum punctatum (*see* Lanternfish, spotted)

Myer, Margaret Jean
J 21: 577 (frozen cod palatability)

Myers, Betty June
S 599 (*Phocanema decipiens* morphology & life history)

Mylocheilus caurinum (*see* Chub, peamouth)

Myogen (*see* Myosin)

Myosin; Myogen (*see also* Actin; Actomyosin; Muscle; Protein fractions; Proteins; Tropomyosin)
C 6: 1 (haddock muscle)
J 7: 585 (& myoalbumin in cod), 599 (denaturation by freezing); **8:** 325 (denaturation by salt); **15:** 135 (extraction from cod muscle); **18:** 637 (separation of Pac. salmon muscle); **20:** 101 (salmonid muscle myogen patterns)
CVI 11 (essential amino acids of lingcod)
S 633 (adenosinetriphosphatase activity of Atl. cod); **695** (Pac. salmons & lingcod myogen); **801** (sedimentation patterns of Atl. cod muscle)

Myoxocephalus aeneus (*see* Grubby)

Myoxocephalus groenlandicus (a sculpin)
C 1: 413 (body temperature); **2:** 104 (high-temperature resistance); **8:** 30 (Hudson Bay)
SS 117, 119 (Hudson Bay)

Myoxocephalus octodecemspinosus (*see* Sculpin, longhorn)

Myoxocephalus polyacanthocephalus (*see* Sculpin, great)

Myoxocephalus quadricornis (*see* Sculpin, fourhorn)

Myoxocephalus scorpioides (*see* Sculpin, arctic)

Myoxocephalus scorpius (*see* Sculpin, shorthorn)

Myoxocephalus scorpius groenlandicus (a sculpin)
B 73: 3 (larvae from E arctic)

Mysidacea (crustaceans) (*see also Mysis relicta*)
C 8: 181 (W Canada waters)
J 4: 281 (E Canada waters); **17:** 517 (*Mysis* vertical movements), 763 (as hosts of nematodes)
B 78: 22 (Great Slave L. *Mysis*)
PRP 79: 35 (as cod feed); **99:** 3 (as crab feed)
S 477 (larval *Contracaecum* nematodes in); **587** (Minas Basin, N.S.)
SS 1081 (*Pseudomma affine*); **1228** (relict)

Mysis relicta (*see also* Mysidacea)
J 19: 1105 (Greiner L., Victoria Is., Canadian Arctic); **21:** 1325 (introduction into Kootenay L., B.C.)
SS 1228 (re N America Pleistocene glaciation)

Mytilicola orientalis (parasitic copepod)
J 21: 205 (first record in California mussel)

Mytilus californianus (*see* Mussel, California)

Mytilus edulis (*see* Mussel, bay (Atlantic); Mussel, bay (Pacific))

Myxine glutinosa (*see* Hagfish, northern)

Myxomycetes (*see also* Fungi)
C 1911-14(II): 213 (Georgian Bay, Ont.)

Myxophyceae (phytoplankters)
J 18: 1001, 1007 (chemical composition & pigments)

Myxosporidia (*see also Chloromyxum;* Disease (of fish); "Milky" condition of flesh; Protozoa)
SS 132 (new species life history)

N

Nadeau, Aristide
J 4: 355, **5:** 121 (citric & lactic acids as flesh preservative)
PRA 21: 16 (poor fishing boat construction re spoilage); **24:** 3, **26:** 3 (acid dip for fresh cod fillets); **24:** 9 (bacteria in natural snow & ice); **26:** 3 (*p*H influence on fish preservation); **29:** 12 (cod liver oil extraction equipment); **36:** 10 (plant sanitation); **39:** 16 (Gaspé Fisheries Experimental Station work)

Naden Harbour, B.C. (*see also* Queen Charlotte Islands)
PRP 107: 22 (abundance of post-larval crab); **109:** 16 (crab tagging)

Nagasaki, Fuzuko
J 15: 313 (B.C. herring fecundity)

Names of organisms (*see* Key; Nomenclature; Taxonomy and systematics)

Nanaimo, B.C. (*see also* Departure Bay; Vancouver Island)
PRP 95: 58, **97:** 14 (harbour oceanography re sewage disposal)
SS 1054 (harbour oceanography re sewage disposal)

Nanoose Bay, B.C. (*see also* Oyster (Pacific species))
PRP 84: 64 (winter trawl fishery; lingcod); **102:** 10, **103:** 8 (Pac. cod fishery & tagging)

Nansenia groenlandica (*see* Argentine, large-eyed)

Narcacion nobilianus (*see* Torpedo, Atlantic)

Narrows Inlet, B.C.
J 18: 976 (oceanography)
PRP 12: 7 (oceanography)
S 123 (oceanography)

Narwhal (*Monodon monoceros*)
CAG 7 (identification)
CNG 32R: 14 (description); **64:** 57 (arctic productive capacity)
SS 119 (James Bay)

Nass River, B.C.
C 7: 295 (mud and jellyfish sink gillnets)
PRP 10: 19 (gillnet sinkage); **76:** 72 (sea dilution by)
S 453, 851: 12 (sockeye salmon abundance & exploitation)
SS 365 (sockeye situation)

Nassarius obsoletus (*see* Snail, eastern mud)

National Parks (*see* Parks, national and provincial)

Natural selection (*see* Selection, natural)

Naubert, Jacques
B 75 (Canadian Atl. shellfish occasional toxicity)

Naucrates ductor (*see* Pilotfish)

Nautichthys oculofasciatus (*see* Sculpin, sailfin)

Neal, Wanda Eloise
J 21: 813 (irradiated scallops storage), 827 (gamma irradiation of haddock fillets)

Neanthes virens (*see* Sandworm)

Neave, Ferris
C 4: 157 (Jasper Park lakes Plecoptera), 185 (Jasper Park lakes aquatic insects), 197 (Jasper Park lakes fishes feed & growth); **7:** 177 (Lake Winnipeg mayflies)
J 6: 140 (littleneck clam sex & gonads), 158 (Pac. salmon upstream migration fluctuations), 245 (*Salmo gairdneri* races & migration); **9:** 450, **12:** 369 (B.C. pink & chum salmon population sizes; fry seaward migration); **16:** 383 (new fish records off B.C.); **17:** 221 (Gulf of Alaska epipelagic fishes); **21:** 1227 (Pac. salmons ocean migration)
B 74 (1945 pink salmon migration); **84** (Cowichan R. game fish populations)
PRP 42: 22 (Cowichan Bay salmon angling records); **46:** 20 (Cowichan R. steelhead salmon); **47:** 19, **51:** 3 (returns

of marked coho salmon to Cowichan R.); **49**: 6 (Cowichan R. cohos in commercial sea catch); **51**: 3 (Skutz Falls coho tagging results); **54**: 12 (shipworm larvae seasonal settlement); **56**: 3 (B.C. oyster "setting"); **61**: 3 (Japanese littleneck clam spread in B.C.), 4 (butter clam legal size re maturity), 16 (Pac. oyster reproduction); **65**: 70 (a lake fish mortality); **70**: 20 (chum salmon natural propagation); **96**: 22 (Queen Charlotte Is. pink salmon cycle); **103**: 14 (pink salmon transplantation)

CNG 13 (1948 salmon catch predictions)

S 157 (*Salmo* scale development); **255** (butter clam productivity); **262, 286** (B.C. commercial clams biology); **263** (salmonid scale patterns & counts); **322** (W coast Vancouver Is. trolled salmon); **334** (B.C. recreation & wildlife potentials); **339, 710** (pink salmon alternate year populations & fluctuations); **382** (introduction of anadromous fishes to Pac. coast); **391** (B.C. salmon freshwater development); **412** (Pac. salmon management problems); **511** (stream ecology re anadromous fishes production); **551** (*Oncorhynchus* origin & speciation)

SS 359 (Lake Winnipeg sturgeon & industry); **598** (teleost scale origin & pattern); **715** (teleost scale histology & regeneration); **716** (Vancouver Is. brown trout); **779, 801** (B.C. commercial shellfish biology); **817** (salmonids lateral line organs development); **818** (B.C. butter clam fishery); **831** (do small salmon produce small salmon?); **832, 857** (Pac. salmon natural propagation efficiency); **856** (B.C. clam production records); **884** (B.C. fishery wealth); **891** (Cowichan L. & R. game fish investigations); **1000, 1042** (pink & chum salmon); **1087** (B.C. coastal Laysan albatross); **1301** (Gulf of Alaska Canadian salmon tagging); **1342** (mew gull nesting colony)

Nectar, clam

PRP 53: 9, **57**: 11 (nutritive values); **55**: 13 (concentrating by freezing)

Nectoliparis pelagicus (*see* Snailfish, tadpole)

Needlefish (*see* Saury, Atlantic)

Needler, Alfred Walker Hollinshead

C 3: 307 (fisheries statistics biological study), 423 (haddock fishery fluctuations); **4**: 265 (haddock life history); **6**: 241 (haddock migrations re populations)

J 5: 8 (young shipworm growth), 236 (temperatures & salinities under marine ice), 253 (temperature & salinity re Atl. oyster); **15**: 759 (Nanaimo, B.C., Biological Station history & activities)

B 22 (P.E.I. oysters); **44** (oyster storage in shell); **48** (oyster spat rearing trays); **60** (Canadian Atl. oyster farming); **75** (Canadian Atl. shellfish occasional toxicity); **111** (Foreword)

PRA 1: 10 (haddock population); **2**: 9 (Atl. oyster); **5**: 7 (hardening oyster beds with sand); **7**: 8 (oyster spat collector floats); **8**: 3 (oyster spat production); **19**: 6, **22**: 8 (protection against shipworm); **27**: 8 (predicting oyster spat), 13 (quicklime for starfish killing as oyster predator); **29**: 15 (disease-resistant oyster stock); **32**: 8 (mollusc survey); **35**: 3 (soft-shell clam production)

COF 1–15 inclusive (Atl. oyster farming)

CSG 1, 3, 10 (Irish moss)

S 452 (B.C. marine resources potentials); **654, 655, 656, 657, 658, 769, 859** (INPFC Canadian research program)

SS 343 (unpigmented eel elvers in haddock stomachs); **344** (N America haddock fishery statistics); **407** (blackfish stranded on P.E.I.); **436** (Canadian Atl. coast oyster farming); **624** (oyster culture report); **625** (P.E.I. butterfish); **746** (hibernated oysters coliform bacteria content); **753** (St. Andrews, N.B., Biological Station work); **809** (trout re-stocking); **1001** (ICNAF Canadian groundfish research); **1141** (B.C. poor herring spawning); **1163** (B.C. fishery resources research; uses); **1205** (new midwater trawl type)

Needler, Alfreda Berkeley (*see also* Berkeley, Alfreda Alice)

C 7: 283 (Atl. oyster sex reversal); **8**: 237 (B.C. Hippolytidae larvae)

J 4: 88 (B.C. shrimp larvae development); **5**: 8 (young shipworm growth), 361 (Atl. oyster sex reversal), 459 (Canadian

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG** Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Atl. Pycnogonida records); **7:** 490 (Atl. shellfish occasional toxicity)
B 25 (haddock life history, fishery & products); **75** (Canadian Atl. shellfish occasional toxicity)
PRA 5: 3 (Atl. oyster sex reversal); **17:** 6 (Atl. oyster sex ratio)
AF 10n (Canadian Atl. Pantopoda)
SS 408 (*Pandalus danae* mating & oviposition); **623** (pandalid larvae hatching & rearing); **733** (*Crago* larval stage)

Neelin, James Michael
J 12: 75 (Atl. cod proteins); **19:** 591 (fish muscle protein fractionation)

Neilands, John Brian
J 6: 368 (triamineoxidase inhibition); **7:** 94 (N.S. marine animals thiaminase)

Nelson, Julius
C 1915–16: 53 (P.E.I. oyster propagation)

Nelson River, Man.
B 79 (trout)
SS 828 (trout)

Nematoda, parasitic (*see also* Parasites; *Phocanema decipiens*)
C 2: 459 (of cunner); **6:** 453 (in Ont. whitefish); **8:** 71 (new genus *Philonema* in sockeye salmon), 161 (*Philometra* in B.C. fishes), 169 (various, in marine & freshwater fishes)
J 7: 187 (in Great Bear L. trout); **8:** 207 (in Great Slave L. fishes); **11:** 267 (in B.C. marine mammals), 673 (in B.C. freshwater fishes); **12:** 93 (in sockeye salmon smolts), 107 (in B.C. whales; correction on **16:** 385), **12:** 571 (in B.C. herring); **13:** 485 (in seals & sea lions), 858 (in arctic char); **14:** 721 (in squid), 831 (in Atl. cod & other fishes); **16:** 213 (in Atl. cod fillets); **17:** 291 (*Pontonema* in soft-shell clams); **18:** 441 (in Lac la Ronge, Sask., trout)
B 4: 11 (in muttonfish); **93:** 37 (in B.C. harbour seals); **98:** 13 (in beluga)
NRB 17: 135, 143 (in Nfld. capelin)
S 387 (*Contracaecum* in prawn); **477** (larval *Contracaecum* in mysids); **599** (*Contracaecum* & *Phocascaris* re *Phocanema*); **618** (new *Cucullanus* species); **623** (arctic); **769, 817** (*Dacnitis* for distinguishing Pac. salmon stocks)
SS 535 (of coho salmon swim bladder); **584** (*Cystidicola* in fishes)

Nemertines
S 623 (arctic)

Nemichthys avocetta (*see* Threadfish)

Nemichthys scolopaceus (*see* Eel, Atlantic snipe)

Nemouridae (*see* Insects, aquatic; Stoneflies)

Neoliparis atlanticus (*see* Seasnail, Atlantic)

Neoscopelarchoides dentatus (*see* Pearleye)

Neotony (*see* Embryology and development; Larvae)

Neothunnus macropterus (*see* Tuna, yellowfin)

Nereids (*see also* Annelida; Polychaeta; Sandworm)
S 451 (new *Nereis* species & record); **831** (*Lycastopsis catarractarum* proboscis)
SS 98 (examination of a collection of)

Nereis virens (*see* Sandworm)

Nereocystis luetkeana (*see* Kelp, bull)

Nereocystis species (*see* Algae, marine; Kelp; Seaweed products)

Neroutsos Inlet, B.C.
J 20: 1109 (oceanography)
S 643 (oceanography re pulpmill pollution)

Nervous system (*see* Physiology, nerve & muscle)

Nessorhamphus ingolfianus (*see* Eel, duckbill oceanic)

Net, cast
NRB 17: 126 (for capelin)

Net, drift (*see* Net, gill)

Net, fixed (pound, set or trap)
J 12: 930 (trap, for Lake Winnipeg burbot); **21:** 613 (trap, avoidance by carp, etc.)
B 25: 23, **69:** 8 (for haddock); **57** (re Atl. salmon angling); **70:** 9 (bag, square & box, for commercial N.B. smelt); **98:** 14

(commercial for beluga); **111**: 74, **121**: 29 (for Atl. herring)

PRA 34: 7 (box net mesh effect on smelt catch); **70**: 3 (trap, for inshore Atl. cod)

CAG 2 (trap, for arctic seals); **6** (trap, for Hudson Bay sea mammals)

CJG 5, 7 (Nfld. trap cod fishery, 1957–59)

CSG 13 (set net & eel-pot trap, for eels)

SS 1230 (trap, for eels)

Net, gill (and gillnetting) (*see also* Float; Jigger; Nets, selectivity of)

C 7: 295 (sinkage by glacial silt plus jellyfish)

J 8: 264 (fishing effort re lifting interval); **11**: 284 (commercial for Lake Winnipeg whitefish); **12**: 451 (Skeena R. salmon: history, selectivity, catches), 930 (Lake Winnipeg burbot); **16**: 134 (jigger for setting under ice), 142 (efficiency of cotton vs. nylon), 339 (mesh selection); **17**: 135 (N.B. herring), 221 (for Gulf of Alaska epipelagic fish); **19**: 1085 (nylon vs. cotton); **20**: 195 (nylon in Africa *Tilapia* fishery), 735 (spatial distribution of freshwater fishes in a catch); **21**: 891 (Gulf of Alaska salmons)

B 56: 40 (whitefish for experiments); **70**: 9 (commercial for N.B. smelt); **107**: 6 (in Great Slave L. fisheries); **111**: 74, **121**: 23 (for Atl. herring)

PRA 72: 27 (for Atl. herring)

PRP 10: 19, **41**: 14 (sinkage by silt, etc.); **24**: 6 (selectivity re Pac. herring); **25**: 3, **49**: 19 (preservatives for linen); **66**: 6 (for Atl. herring); **72**: 36 (damage by seals); **77**: 91 (sunken, for B.C. dogfish); **101**: 16 (nomenclature for nylon twine); **107**: 27, **109**: 9 (for salmon in NE Pac. high seas)

CNG 51 (strengths of various nylon twines); **54** (monofilament nylon web); **66**: (polypropylene continuous-fibre tests)

CSG 7 (jigger for setting under ice)

CVI 19 (selection & care of nylon)

S 319 (cotton vs. nylon in Lake Winnipeg fishery); **392** (sunken, for B.C. dogfish)

SS 914 (optimum mesh size, Lake Manitoba); **916** (nylon, Lake Erie); **930** (for Atl. herring); **962** (nylon vs. cotton)

Net, plankton (*see also* Phytoplankton; Plankton; Zooplankton)

SS 439 (utility)

Net, tow

J 13: 696 (for sampling lake sockeye salmon)

Net, trammel

S 783 (use in Canadian waters)

Net, trawl (*see* Trawl)

Nets, selectivity of (*see also* International Commission for the Northwest Atlantic Fisheries; Mesh)

J 12: 460, **15**: 867 (gillnets for sockeye salmon); **16**: 339 (gillnets for Atl. herring; correction on **16**: 930); **19**: 1085 (gillnets for lake trout)

B 139 (trawl mesh regulations, B.C.)

PRP 24: 6 (herring drift nets); **34**: 7 (effect on smelt grading); **69**: 33 (cod dragging)

CNG 61 (trawls, Strait of Georgia)

S 850 (otter-trawl codend)

SS 439 (for plankton); **914** (for Lake Manitoba fishes); **1234** (for scallops)

Netting (*see also* Fibres, synthetic)

PRP 25: 3, **49**: 19 (preservatives for)

SS 1209 (physical properties)

Neufeld, Abram Herman

SS 625 (bromine biochemistry)

Neumann, Jehuda

J 16: 923 (maximum & mean lake depths)

New Brunswick (*see also* Limnology; Oceanography, Atlantic (NW coastal waters); *also* names of individual localities, bodies of water, rivers and other cognate subjects, particularly names of Canadian Atlantic coast commercial fishes)

J 1: 171 (tidal mixing, Reversing Falls); **9**: 213 (Grand Manan Channel current); **17**: 133 (herring fishery; correction on **17**: 944)

B 155 (fishes of Atl. coast of Canada)

PRA 34: 5 (smelt catch in NE); **42**: 7

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(brook trout angling yield); **69**: 33 (dragger mesh regulations); **72**: 8 (cod tagging)
CSG (*see* list of titles of this series, many of which pertain to New Brunswick topics)
S 50 (Entomostraca in lakes & ponds); **461** (electrofishing in streams); **841** (physiography, limnology, flora, fauna, etc.)

New species (*see* Species, new)

Newcombe, Charles F.
C 1917–18: 5 (B.C. Sea-lion Commission Report)

Newcombe, Curtis Lakeman
PRA 3: 10 (Bay of Fundy soft-shell clam resource)
SS 556 (light re *Balanus* growth); **560** (sea mussel community relationships); **561, 599, 600** (soft-shell clam abundance & growth); **657** (quahaug growth index variations)

Newcombe, W. A.
SS 352 (sea lions)

Newfoundland (*see also* Belle Isle, Strait of; Grand Bank; International Commission for the Northwest Atlantic Fisheries; Labrador; Oceanography, Atlantic; *also* individual localities and other cognate subjects, particularly names of Canadian Atlantic coast commercial fishes)
J 12: 682 (sulphite pulpmill pollution survey; correction on **14**: 997); **13**: 449, **18**: 31 (herring populations & biology); **14**: 831 (distribution of seals & nematodes); **15**: 275, 295 (capelin in offshore areas), 517 (round & gutted haddock landings), 695 (abnormal pigmentation of redfish, cod & haddock fillets); **16**: 339 (herring gillnet selection), 763 (redfish larvae); **17**: 211 (sound scatterers in sea), 235 (redfish feed), 775 (cod growth & maturity); **19**: 445 (cod tagging), 811 (oceanic puffer record), 891 (blue ling record); **21**: 597 (American plaice fecundity; correction on **21**: 1554)
B 108 (Danish-seine exploration for witch & plaice); **111**: 153 (herring abundance investigation); **120** (redfish survey); **129** (shrimp survey); **132** (pilot whale biology); **135** (scallop survey); **140** (sharks); **155** (fishes of the Canadian Atl. coast)
PRA 59: 6 (capelin analyses); **63**: 19, **68**: 9 (longlining experiments); **66**: 20, **67**: 14 (redfish exploration); **68**: 20, **70**: 16 (salmon biology, survival, utilization)
CJG 1–11 inclusive (groundfish landings statistics, 1953–63); **2–11** inclusive (groundfish investigations, 1954–63); **5, 6** (scallop & shrimp surveys, 1957–58); **10**: 29 (lobster surveys, 1962), 33 (shrimp surveys, 1962)
CNG 64: 10 (cod production, 1800–1960)
NRB (*see* list of titles of these publications all dealing with Nfld.)
NSB (*see* list of titles of these publications all dealing with Nfld.)
S 519 (dolphins); **686** (two giant trout); **841** (physiography, limnology, flora, fauna, etc.)
SS 63 (list of fishes); **804** (fisheries research history); **1003, 1004** (whaling industry); **1093** (fishery research); **1134** (herring exploration); **1384** (B.C. pink salmon transplant to)

Newton, Dorothy Elizabeth
C 1: 377 (marine spore-forming bacteria)

Newton, Merlin V. B.
C 7: 341 (*Triaenophorus tricuspidatus* biology)

Ney, Phyllis Winifred
J 7: 563 (fishery products protein amino acids)
PRP 77: 97 (fishery products protein amino acids); **78**: 11 (*p*H effect on fish spoilage indicators); **79**: 37 (animal protein factor in fish products)
CVI 11 (fish products amino acids)
S 310 (fish products vitamin B_{12})

Nezumia bairdi (*see* Marlin-spike)

Niacin (*see* Vitamin B group)

Nicholls, Charles Franklin
J 17: 687 (aquarium for predator–prey studies)

Nicholls, John Van Vliet
C 7: 45 (temperature influence on *Fundulus* digestion), 447 (temperature & drug effect on elasmobranch digestion); **8**: 137 (temperature effect on tissue survival), 145 (temperature & drug effect on elasmobranch intestine), 207 (*Raja* arteries & cornus structure & stimuli)

Nickel compounds (*see also* Hydrogenation)
J 16: 7 (in Atl. coastal seawater)

Nichol, Joseph Arthur Colin
J 21: 1089 (selachian chorioidal tapeta reflectivity)

Nicola Lake, B.C.
B 42: 28 (productivity)
S 144 (fishes)

Nicotinic acid (*see* Vitamin B group)

Nile Creek, B.C.
J 11: 933 (spawning bed oxygen supply); **15**: 1103 (chum salmon survival)
PRP 82: 10, **83**: 44, **85**: 90, **89**: 90 (salmon observations); **89**: 88 (coho salmon population); **93**: 7 (salmon production with stream control); **113**: 6 (spawning pink salmon behaviour), 8 (pink salmon fry behaviour)
SS 1055 (pink & chum salmon studies)

Nilkitkwa Lake, B.C. (*see* Babine Lake system)

Nipigon, Lake, Ont.
C 6: 184 (whitefish)

Nipissing, Lake, Ont.
SS 687 (birds)

Nipper (*see* Cunner)

Nitinat Lake, B.C. (tidal)
J 20: 1109 (size & depth); **21**: 1069 (oceanographic & biotic data)

Nitophyllum (a red seaweed)
CNG 44: 17 (use by herring as spawning substrate)

Nitrate (*see also* Sodium nitrate)
J 2: 1 (strychnine reagent for determination of, in seawater); **14**: 308 (in Strait of Georgia waters); **21**: 159 (re marine plankton growth)
B 125: 61, 185 (determination in seawater; revised edition in 1965)

Nitrite (*see also* Inlet and fiord oceanography; Sodium nitrite as preservative)
J 14: 308 (in Strait of Georgia waters)
B 125: 71 (determination in seawater; revised edition in 1965)
PRA 72: 33 (in W Atl. offshore waters)

Nitrogen
J 7: 238 (fish storage rancidity inhibitor)
PRP 66: 17 (as antioxidant)
CVG 23 (as antioxidant for frozen salmon)
S 675 (liquid, as refrigerant)

Nitrogenous compounds (*see also* Acids, amino; Amines; Ammonia; Protein; Protein fractions; Purines; Trimethylamine; Trimethylamine oxide; etc.)
J 12: 643 (in fish & mammalian liver), 646 (in sturgeon muscle); **13**: 130, 156 (in normal & "jellied" plaice fillets), 559 (in nitrite-treated cod fillets); **14**: 41 (in sewage, soils, freshwater & marine sediments & seston, fresh & marine waters; correction on **14**: 997), 627, 926 (in Atl. cod fillets); **17**: 478 (in spoiling shrimp muscle), 811 (of dogfish flesh), 895 (in lobster)
B 125: 81, 125 (determination in marine plankton); **126**: 31 (losses in refrigerated seawater storage of fish)
S 116 (sea-urchin development requirements); **517** (review of biochemical aspects); **537, 539** (in spawning migratory Pac. salmon flesh); **542** (in teleost excretion); **626** (biochemical changes in muscle of maturing fish)
SS 1198 (non-protein, in spawning migratory sockeye salmon)

Noble, E. C.
C 2: 115 (fish insulin yields)
SS 273 (insulin from fish)

Nocomis bigutatta (*see* Chub, hornyhead)

Noctiluca (*see* Protozoa)

Nogies Creek, Kawartha Lakes, Ont.
J 13: 599 (maskinonge study); **17**: 919 (maskinonge growth)

Noise, reaction to (*see* Sound, reaction to)

Nomenclature (*see also* Taxonomy and systematics)
B 32 (B.C. game fishes); **68, 68R** (B.C. marine fishes); **127** (B.C. marine plants);

137 (arctic & E Canadian seals); **140** (Atl. sharks); **155** (Canadian Atl. marine fishes)
PRA 25: 12 (commercial Maritimes flatfishes)
PRP 62: 10 (commercial B.C. flatfishes)
CNG 4 (B.C. flatfishes); **65** (Russian–English glossary of aquatic biological terms)
CSG 12 (Atl. flounders); **15** (smelt, capelin & silverside); **19** (herring, alewife & shad)
S 481 (Man. fishes)
SS 155 (Atl. flatfishes); **595** (rainbow trout specific names); **849** (common & scientific names of Canadian & U.S.A. fishes); **1046** (stoneflies); **1208** (B.C. freshwater fishes)

Nomeus gronowi (*see* Man-o'-war fish)

Non-protein nitrogen compounds (*see* Nitrogenous compounds *and* subjects listed with that heading)

Nootka Lightstation, B.C. (*see also* Lighthouse oceanographic stations, B.C. coast)
PRP 26: 5, **31**: 16, **86**: 6, **90**: 16, **98**: 6 (re collection of daily oceanographic data)

Nootka Sound, B.C.
J 3: 43 (oceanography); **20**: 1109 (oceanography of inlets off)

Norden, Carroll Raymond
J 18: 679 (salmonid osteology re grayling phylogeny)

Norris, Margaret Ellen
PRP 96: 11 (marine bacteria nutrition & metabolism)
S 388 (marine bacteria nutritional requirements)

North America
PRA 64: 16 (seawater temperatures during circumnavigation of)

Northcote, Thomas Gordon
J 13: 515 (B.C. lakes productivity indices); **16**: 695, **19**: 173, 201 (rainbow trout migratory behaviour); **20**: 105 (ecology of 2 B.C. dace species), 1001 (redside shiners life history; correction on **21**: 1553); **21**: 1069 (Nitinat Lake, B.C., characteristics), 1321 (seawater in Sakinaw L., B.C.)
SS 1371 (W Canada limnology)

Northumberland Strait (*see also* Oceanography, Atlantic (NW coastal waters); St. Lawrence, Gulf of)
J 21: 661 (lobster larvae abundance & distribution)
PRA 28: 7 (fall lobster fishery intensity); **32**: 8 (shore molluscs resource survey); **70**: 31 (scallop fishery recent trends)
SS 1227 (fishery trials)

Northwest Passage, Canadian Arctic (*see also* Oceanography, arctic)
SS 1269 (traverse of)

Northwest Territories (N.W.T.) (*see also* specific localities and bodies of water, e.g. Great Bear Lake; Great Slave Lake; Mackenzie River)
J 19: 1105 (Greiner L. relict fauna); **20**: 265 (whitefish growth & mortality); **21**: 643 (angling licence sales)
B 72 (fisheries survey); **85** (Pinnipedia); **94** (freshwater vertebrates); **137** (seals)
CNG 64: 60 (fisheries productive capacity)
SS 759 (coregonids); **1090** (stoneflies)

Norway
SS 1002 (minke whaling)

Notacanthus chemnitzi*; *N. nasus*; *N. phasganorus (*see* Tapirfish, largescale)

Notemigonus crysoleucas (*see* Shiner, golden)

Notolepis coruscans (*see* Barracudina, ribbon)

Notorhynchus cepedianus*; *N. maculatum (*see* Shark, sevengill)

Notoscopelus elongatus*; *N. resplendens (*see* Lanternfish, patchwork)

Notoscopelus krøyeri (*see* Lanternfish, Krøyer's)

Notropis atherinoides (*see* Shiner, emerald)

Notropis blennius (*see* Shiner, river)

Notropis cornutus (*see* Shiner, creek)

Notropis deliciosus (*see* Shiner, sand)

Notropis heterodon (*see* Shiner, blackchin)

Notropis heterolepis (*see* Shiner, blacknose)

Notropis hudsonius (*see* Shiner, spottail)

Notropis rubellus (*see* Shiner, rosyface)

Notropis spilopterus (*see* Shiner, spotfin)

Notropis umbratilus (*see* Shiner, redfin)

Notropis volucellus (*see* Shiner, mimic)

Noturus flavus (*see* Stonecat)

Noturus gyrinus (*see* Madtom, tadpole)

Nova Scotia (*see also* Limnology, Oceanography, Atlantic (NW coastal waters); *also* names of individual localities, bodies of water, rivers and other cognate subjects, particularly names of Canadian Atlantic coast commercial fishes)
J 2: 41 (lobsters); **3**: 348 (new annelid); **5**: 105, **12**: 698 (cod); **6**: 498 (worm in oysters); **7**: 95 (thiaminase in animals), 248 (fertilization of streams); **11**: 171 (yellowtail flounder), 454 (polychaetes); **17**: 133 (herring fishery)
B 111 (herring investigations); **155** (Canadian Atl. coast marine fishes)
PRA 13: 10 (cod spawning); **20**: 6, **42**: 7 (lakes fish production); **24**: 12 (haddock landings); **32**: 8 (mollusc survey); **42**: 7 (brook trout angling yields); **50**: 3 (halibut movements); **53**: 3 (fluctuating inshore water temperatures); **67**: 6 (cod tagging)
CSG (*see* list of titles of this series, many of which pertain to Nova Scotia topics)
S 548 (marine birds); **841** (physiography, limnology, flora, fauna, etc.)
SS 381, 571, 575 (list of fishes); **869** (fisheries research); **1080** (vascular plants)

Nucleic acids (*see* Acids, Nucleic)

Nucleotides; Nucleosides (*see also* Acids, nucleic)
J 17: 371, 605, **20**: 187 (of lingcod muscle); **17**: 449 (in Pac. salmons muscle), 565 (in maturing sockeye salmon tissues); **18**: 349 (from deoxyribonucleic acid using salmon enzymes)
S 517 (review re biochemical significance); **521** (bacteria requirements of); **522** (of chinook salmon liver); **526, 534, 570** (lingcod muscle phosphorylase); **622** (role in inositol metabolism); **818, 849** (formation from N bases by salmon milt extract); **865** (cyclic phosphates synthesis & hydrolysis); **880** (of Pac. oyster)
SS 211 (of dogfish pancreas); **1308** (ribonucleoside cyclic phosphates synthesis); **1330, 1358, 1365** (nucleosides from coenzyme B_{12}); **1343** (synthesis of inter-ribonucleotide linkage); **1373** (preparation of nucleotides & derivatives)

Nudibranchiata (*see also* Gastropoda)
S 12 (colours, spawn & distribution, Vancouver Is. region); **30** (record list from eastern Pac.); **49** (new species & record, Vancouver Is.)
SS 222, 274 (Vancouver Is. region); **240, 241** (taxonomy of Pac.)

Numbfish (*see* Torpedo, Atlantic)

Nutrients (in natural waters) (*see also* Detritus; Fertilization of waters; Limnology; Oceanography; Phytoplankton; Plankton)
J 1: 299 (Bay of Fundy phosphates & nitrates); **10**: 253 (lake plankton growth factors), 283 (lake plankton mineralization); **13**: 518 (in B.C. lakes); **14**: 307 (nitrates, nitrites, phosphates & silicates re marine cycle); **17**: 871 (effect on algal growth)
B 125 (analytical methods for, in seawater; revised edition in 1965)
S 631 (re marine productivity & fertility)

Nutrition requirements of bacteria (*see also* Bacteria; Culture)
S 388, 432, 478, 486, 487, 516, 521, 533, 608, 634 (a series on marine bacteria requirements)

Nutrition requirements of fish and other animals (*see* Feed studies; Feedstuffs; Hatcheries; Nutritive value; *and* other cognate subjects)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVS**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Nutrition requirements of man (*see* Composition, chemical; Food; Man; Nutritive value; Vitamins, etc.)

Nutritive value (The following is not an exhaustive listing; many additional reports of analyses and composition of organisms in connection with other investigations have a bearing on this subject. *See also* Acids, amino; Composition, chemical; Oils and fats; Feed studies; Feedstuffs; Food; Flesh; Meals; Mineral constituents; Oils; Protein; Vitamins, etc.; *also* names of organisms and their products) (Numbered references hereunder are a series on the nutritive value of B.C. fishery products)

C 6: 335 (4. pilchard oil vitamin A); **7**: 405 (5. lingcod liver oil vitamin A); **8**: 265 (6. salmon liver oil vitamin A)

J 2: 431 (7. canned salmon oil vitamins A & D), 439 (8. canned pink & sockeye salmon), 457 (9. canned pilchard), 461 (10. fresh lingcod), 463 (11. canned coho salmon), 469 (12. mineral constituents of canned pink, sockeye & blueback salmons; canned pilchard), 473 (13. mineral constituents of canned coho salmon), 477 (14. fresh oysters); **5**: 344 (15. canned crab, shrimp & clams); **7**: 35 (16. biological food value of lingcod, lemon sole, halibut & salmons), 74 (17. comparative biological values of pork, beef, salmon, halibut, lemon sole & lingcod), 513 (amino acids of Pac. fish products; in Table III multiply all N% by 10 except for stickwater); **8**: 117 (growth factor in salmon products for young salmonid fishes); **9**: 129, **11**: 355 (vitamin B_{12} in cod liver), 164 (vitamin B_{12} in marine invertebrates); **10**: 64 (vitamin B_{12} in herring meal, etc.); **18**: 85 (protein biological values of protein concentrate; liver & viscera meals), 113 (liquefied herring as animal feed), 483 (Atl. halibut), 495 (mackerel, tuna & swordfish), 893 (various Atl. fishes); **20**: 229 (B.C. whole herring meal), 909, **21**: 703 (seasonal variations in Atl. fish muscle extractives); **21**: 1489 (fish protein concentrate)

B 25: 28 (haddock); **37, 59, 89** (marine animal oils & their vitamins; *see* their indexes); **46**: 3 (pilchard oil); **92** (fish for mink)

PRA 37: 9 (seal liver); **49**: 5, **54**: 3 (cod liver meal); **59**: 6 (capelin); **65**: 24 (acid ensilage from fish offal); **67**: 29 (fish protein concentrate)

PRP 16: 3, **19**: 20, **30**: 11, **33**: 20, **41**: 17, **53**: 9 (B.C. canned fishery products); **19**: 20, **37**: 17, 19, **41**: 8, **53**: 9, **57**: 11, **69**: 66, **75**: 48 (fresh, frozen or filleted products); **20**: 16, **23**: 18, **53**: 9, **55**: 13, **57**: 11 (shellfish); **53**: 9, **57**: 11, **66**: 9 (smoked products); **77**: 97, **79**: 37, **80**: 52 (various products); **85**: 83, **87**: 42, **89**: 79, **90**: 10, 14, **92**: 10, **93**: 18, **99**: 12, **101**: 27, **103**: 18, **108**: 24, **111**: 23, **113**: 3 (meals & condensed solubles)

CCG 5: 1 (freshwater fishes)

CVI 3 (canned shellfish of northern B.C.); **9, 12, 13** (freshwater fishes); **15** (effects of various processing procedures on); **17** (B.C. fish, shellfish, whales)

CVG 24 (B.C., Atl. & other herring meals); **25** (B.C. herring meal re lipid fraction); **26** (B.C. whole herring meal)

S 162 (B.C. canned salmon); **305** (nutritional aspects of Board's investigations); **332** (effects of handling fish & products on); **373, 374, 425, 641** (herring meal); **718** (effect of gamma-ray pasteurization)

SS 724 (B.C. canned salmon); **736** (fish in wartime diet); **1006** (fish re human nutrition); **1083, 1084, 1164, 1166** (fish as food resource); **1094** (sea foods); **1265, 1346** (processing effects on fish products); **1266** (fishery products); **1328** (fish protein concentrate); **1374** (re food technology)

Nutt, David Clark

J 10: 177 (Labrador coast oceanography); **13**: 709 (oceanography of Hebron Fiord, Labrador)

Nylon (*see* Fibres, synthetic; Net)

O

Oak

SS 1391 (fauna of dead wood)

Oak Bay, N.B.

J 18: 183 (oceanography re proposed power project)

Oakland, G. B.
SS 918 (whitefish sampling sequential analysis)

Obituaries
J 3: 183 (A. B. Macallum), 185 (A. P. Knight), 187 (E. E. Prince), 188 (J. A. Stevenson); **4:** 228 (W. T. MacClement), preceding page 309 (J. P. McMurrich); **5:** (i) (Philip Cox); **6:** 204 (John Dybhavn), 207 (Arthur Willey), 459 (Frère Marie-Victorin); **7:** 214 (C. McL. Fraser), 216 (A. T. Cameron); **12:** 795 (G. B. Reed); **16:** 387 (R. B. Miller); **18:** 479 (D. S. Rawson); **19:** 511 (A. H. Leim); **20:** 239 (D. J. Milne), 1349 (Edith Berkeley); **21:** 409 (H. N. Brocklesby)
PRA 34: 3 (J. J. Cowie; John Dybhavn); **41:** 3 (A. T. Cameron); **61:** 3 (G. B. Reed); **73:** 3 (W. D. R. Cossaboom)
PRP 32: 3 (Lucy S. Clemens); **35:** 3 (Robert Largue); **54:** 3 (J. J. Cowie); **55:** 3 (John Dybhavn); **66:** 3 (G. H. Wailes); **70:** 3 (C. McL. Fraser); **72:** 3 (Hon. H. F. G. Bridges); **73:** 3 (A. T. Cameron); **83:** 44 (H. C. Williamson); **89:** 75 (B. E. Bailey); **102:** 3 (G. B. Reed); **105:** 26 A. D. Bajkov); **112:** 6 (N. A. LePage)
SS 54 (G. W. Taylor); **684** (J. P. McMurrich); **761** (Arthur Willey); **800** (E. E. Prince); **823, 851** (C. McL. Fraser)

Observatory Inlet, B.C.
J 18: 907 (oceanography)

Obstructions to fish migration (*see also* Barriers; Guiding; Migration; Tidal energy for hydroelectric power)
B 86 (Mauricetown Falls, B.C.); **101, 106** (Babine R., B.C., rockslide); **114** (hydroelectric dams)
PRA 35: 24 (clearing of, for smelt spawning)
PRP 88: 60, **90:** 3, 9 (Babine R. rockslide)
NRB 12 (Nfld. rivers)
S 356 (dams, to Pac. salmons)
SS 175, 805, 834 (Hell's Gate, Fraser R., to salmons); **370, 938** (re sockeye salmon migration)

Occa verrucosa (*see* Poacher, warty)

Ocean (The following are only a selection of general references. For physical and chemical *oceanography*, see the various headings of Oceanography; *also* Physiography. For *oceanic fishing*, see Fishery; International Commission for the Northwest Atlantic Fisheries; International North Pacific Fisheries Commission; *also* Fishing, methods of; *also* names of oceanic organisms. For *coastal* regions of oceans, see certain headings under Oceanography, *also* names of coastal Provinces and coastal bodies of water; *also* names of marine coastal organisms)
J 13: 357 (climatic trends re NE Pac. fisheries); **19:** 271 (distribution of animals in NE Pac.)
B 68, 68R (descriptions of fishes off B.C. coast); **88** (fishes of E Canadian Arctic Ocean); **134** (Canadian Atl. waters); **155** (descriptions of fishes off Canadian Atl. coast)
PRP 113: 13 (oceanic primary productivity)
CNG 64 (productive capacity of Canadian fisheries)
S 306 (various aspects of oceans bordering Canada); **326, 361** (arctic & subarctic seas resources); **472** (ocean floor & water movement); **623** (arctic infaunal benthos); **631, 828** (primary productivity & fertility in NE Pac.); **650** (marine resource production, values, imports, exports); **758** (oceanic detritus); **858** (suspended organic matter)
SS 18, 296, 431 (ocean palaeochemistry); **237, 316** (harvest of the sea); **238** (giant squid re "sea serpent" tales); **347** (plant life in the open sea); **423, 871** (sea as Nature's laboratory); **711, 1166** (food from the deep); **849** (list of fishes off Canadian coasts); **982** (sea life in the arctic); **1260** (ocean pastures); **1324** (distribution & ecology of arctic fishes); **1332** (fisheries & the science of the sea)

Ocean fishing (*see also* Fishery; International Commission for the Northwest Atlantic Fisheries; International North Pacific Fisheries Commission; Ocean:

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

also Fishing, methods of; *also* names of oceanic commercial fishes and marine mammals)
S 720 (advances in U.S.S.R.)

Ocean survival (*see* Survival; *also* names of oceanic fishes)

Oceanographic bibliographies
B 134: 104 (NW Atl. & E. subarctic)
S 410, 535 (B.C. coast); **483, 590, 773** (Canadian oceanography); **585** (NE Pac.); **858** (suspended organic matter); **869** (subarctic Pac.)

Oceanography, arctic (north of Hudson Bay, Hudson Strait and Ungava Bay, west of Greenland to Chukchi Sea) (*see* page xv of Preface, *also* Oceanography; Oceanography, subarctic)
J 6: 460 (west Greenland current); **8**: 378, **13**: 591, **14**: 731, **16**: 403, **18**: 253 (western region; correction on **J 16**: 930); **8**: 378, **14**: 731, **16**: 403 (Beaufort Sea); **8**: 378, **20**: 119 (Bering Strait and Sea region); **13**: 303, 591, **14**: 731 (Baffin Bay); **13**: 591, **14**: 731, **15**: 155, **16**: 403, 453, **18**: 563, **19**: 377, 677 (eastern region); **15**: 1175, **18**: 563, **19**: 377, **21**: 45 (Foxe Basin and Channel)
B 13, 88 (eastern region)
PRA 64: 16 (bathythermograms from E to W); **69**: 18 (eastern region); **72**: 33 (Baffin Bay)
PRP 81: 79 (Chukchi Sea, Arctic Sea)
CPO 1962-24 (IGY Polar Pack Operation)
S 304 (Canadian interests); **361** (bathymetry & ecology); **379** (rising sea temperatures); **441** (Davis Strait); **471** (submarine topography effects on waters); **483, 590, 674, 773** (review reports); **623** (re infaunal benthos); **808** (*Calanus* as water movements & conditions indicator)
SS 183, 184, 937, 1070 (eastern region); **1047** (Bering Strait, Chukchi Sea, Polar Sea); **1064, 1269** (E to W); **1067** (water masses, circulation, ice cover); **1112** (U.S.S.R. plan to dam Bering Strait); **1182, 1270** (Arctic Ocean)

Oceanography, Atlantic (northeastern waters) (*see* page xv of Preface, *also* Oceanography)
J 20: 789, 1031, 1519, **21**: 183 (N Atl. and British coastal waters)

Oceanography, Atlantic (northwestern coastal waters) (*see* page xv of Preface, *also* Oceanography) (*see also under* International Commission for the Northwest Atlantic Fisheries the lists of reports dealing with hydrography)
C 1906–10: 281, **1914–15**: 151, **1915–16**: 109, **1917–18**: 295, **7**: 127, 255, **8**: 398 (Passamaquoddy Bay & vicinity); **1914–15**: 145 (N.B. coast re oysters); **1914–15**: 163, **1917–18**: 127, **1**: 101, 353, **7**: 73 (Bay of Fundy); **1914–15**: 55, **1915–16**: 72 (P.E.I. coast re oysters); **2**: 69 (Halifax harbour)
J 1: 121, 171, 279, **2**: 115, 141, **3**: 189, **4**: 424, **7**: 355, **9**: 213, **10**: 97, **11**: 32, 428, **14**: 931, **15**: 115, 1451, **17**: 181, 377, **18**: 221, **19**: 101, 975 (Bay of Fundy); **1**: 133, **3**: 189, **11**: 3, **17**: 127, 169, 553, 713, 727, 743, **18**: 163, **19**: 877, 895, 975 (Passamaquoddy Bay); **1**: 227, **8**: 332 (storm effects); **2**: 485, **10**: 394 (re lobsters); **4**: 287, **5**: 215, **12**: 270 (re oysters); **4**: 378 (Gulf of St. Lawrence to Bay of Fundy); **5**: 84 (P.E.I. re starfish); **5**: 105, **21**: 429 (N.S. re cod spawning); **5**: 164 (estuaries re plankton); **5**: 236 (conditions under ice in an inlet); **8**: 332, **10**: 146, **12**: 351, **13**: 435, **16**: 830, **17**: 211, **18**: 185, **21**: 429 (Gulf of St. Lawrence); **10**: 177, **11**: 198, 431, **13**: 709, **15**: 1163, **16**: 403, **17**: 211 (Belle Isle Strait & Labrador coast); **12**: 682 (re pollution; correction on **14**: 997); **15**: 625, **21**: 429 (climate changes re fisheries); **15**: 1150 (investigations review); **16**: 7 (seawater chemical composition; correction on **16**: 930); **17**: 211 (sound-scattering layer)
B 5: 10, **22**: 7, **111**: 185, 193, 195, 213, 251, 269, 287 (Gulf of St. Lawrence); **13** (arctic ice); **18** (Belle Isle Strait re cod); **88** (Labrador coast); **109**: 45 (Nfld. re longlining); **134** (various areas); **155**: 8 (summary)
PRA 4: 10, **7**: 3, **11**: 3, **21**: 14, **42**: 4, **43**: 7, **51**: 17, **53**: 5, **58**: 6, **71**: 8, **73**: 11 (Bay of Fundy); **11**: 6, **23**: 13 (re cyclones & hurricane); **17**: 11, **50**: 3 (N.S. banks re cod); **21**: 14, **42**: 4, **51**: 17, **58**: 6, **59**: 7, **71**: 8, **73**: 11 (Gulf of St. Lawrence); **51**: 17, **53**: 3, 5, **58**: 6, **71**: 8, **73**: 11 (Halifax region)
NRB 5: 13 (*Ceratium* as indicator species of Nfld. waters); **16**: 6 (re Nfld. lobsters)

S 20, 21, 43, 414, 587, 966 (Bay of Fundy); **42** (re marine borers); **48, 211, 346, 368** (Passamaquoddy region); **317** (Labrador coast); **358** (Sambro lightship storm data); **368** (long-term hydrographic changes); **471, 472** (submarine topography re water movements); **483, 590, 773** (review reports)

SS 171 (tide effect on fishes distribution); **183, 184** (1914–15 Canadian Fisheries Expedition); **196** (ocean climate); **200, 201** (Gulf of Maine currents); **201, 867, 886** (Bay of Fundy); **267, 307, 961** (general); **282** (Nfld. vicinity); **310, 456, 493, 886, 1231** (Passamaquoddy Bay); **493, 494** (re herring); **497, 559, 1125** (temperature re cod); **883, 961** (review reports); **1023** (mainland to Continental Shelf); **1086** (re tuna & herring fisheries); **1210** (re scallops); **1240** (the "inner space"); **1319** (oceanographic research bodies); **1320** (Bedford Institute of Oceanography opening)

Oceanography, Atlantic (northwestern open waters) (*see* page xv of Preface, *also* Oceanography) (*see also under* International Commission for the Northwest Atlantic Fisheries the lists of reports dealing with hydrography)

C 4: 137 (re flounders); **4**: 271, **6**: 255 (re haddock)

J 4: 339 (Gulf Stream migrations); **5**: 377, **7**: 1, **10**: 148, 155, **11**: 404, 419, **12**: 375, **13**: 297, **14**: 213, **15**: 79, **17**: 181 (Scotian Shelf); **7**: 355 (surface temperature trends & cycles); **9**: 223 (re phytoplankton); **15**: 1247 (Laurentian Channel); **21**: 327 (slope waters), 1475 (dissolved calcium carbonate), 1523 (currents re eel breeding)

B 134 (various regions)

PRA 11: 6 (cyclones); **16**: 3, **24**: 6, **29**: 3, **58**: 23, **59**: 12, **60**: 19, **61**: 10, **62**: 14 (Scotian Shelf); **20**: 11 (Gulf Stream); **63**: 16, **64**: 16 (off N.S. to Labrador Sea); **64**: 16 (bathythermograph data from Panama Canal to Davis Strait); **72**: 33 (Bermuda to Davis Strait, re IGY; correction on **J 17**: 944)

CPO 1964-5 (continuously recorded surface temperatures off NE America coast)

S 21, 136, 139, 178, 201, 204, 210, 414, 472 (Scotian Shelf); **182** (exceptionally high temperature W of Bermuda); **317** (Labrador current); **379A** (sea climate changes); **483, 590, 773** (review reports); **808** (*Calanus* as indicator)

SS 218, 219 (drift bottles crossing Atlantic Ocean); **497, 559, 1125** (temperature re cod); **883, 961** (review reports); **932, 1241, 1329, 1362** ("A. T. Cameron" research vessel cruises); **1023** (Scotian Shelf); **1161** (sea temperature decreasing); **1278, 1285** (IGY Polar Front Survey); **1297** (temperatures & salinities re IGY sea-level recording)

Oceanography, general (methods, investigations, regions) (*see* page xv of Preface, *also* Oceanography)

C 6: 417, 423 (water bottle for bacteria); **7**: 73 (spectral absorption), 119 (silicate determination method)

J 2: 1 (nitrate determination method); **3**: 93 (improved surface-current charting); **13**: 273 (Na, K, Ca determination method); **14**: 33 (organic matter molecular origin), 477 (planning inshore surveys); **15**: 453 (solar penetration re photosynthetic productivity); **15**: 625 (climatic changes re fishery yields); **16**: 381 (portable electrical conductivity apparatus); **17**: 337 (P compounds determination methods); **19**: 1121 (machine computations of mass transport); **20**: 1549 (bottom sampler); **21**: 639 (plankton subsampler), 647 (aperture cards for bathythermograph data)

B 122 (re phytoplankton productivity); **125** (seawater analysis manual; revised edition in 1965); **134** (basic principles)

PRA 64: 16 (bathythermogram data around N America)

PRP 22: 3 (re feed cycle, etc.); **78**: 14 (temperature measurement procedure); **102**: 24 (salinity determination & significance); **113**: 13 (re primary productivity)

CNG 59 (radioactive wastes disposal)

CPO 1960-1 (conductivity salinometers), **-9** (helicopter use); **1960-20, 1961-19** (primary conductivity in submerged plastic

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax, **CJG**—St. John's; **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews, **CVI, CVG**—Vancouver, **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

bag); **1960-27** (machine processing data); **1963-2, 1964-6** (airborne radiometer thermometry); **1964-1** ("slicks" on sea surface), **-4** (graphing running means), **-5** (continuous recording of surface temperatures from ship)

S 20, 21 (tidal oscillations); **27, 103, 105, 778** (radiant light penetration of water); **172** (chlorinity to salinity conversion graphs); **177** (nomograph for reversing-thermometer corrections); **189** (colorimetric analyses apparatus & technique); **191** (units for reporting dissolved constituents); **241** (explosion during $AgNO_3$ recovery); **293, 294** (effect of conditions on fish); **306** (meteorology, geophysics, etc.); **345** (fresh water effects on entering sea); **347** (semi-micro dissolved oxygen determination); **355** (new water bottle); **454** (effect of ship's roll on current meter); **472** (ocean floor re water movements); **473** (classification of daily data); **576** (NH_3, Fe, NO_3, P determination methods); **582** (thermodynamics re data interpretation); **583** (data accuracy & precision assessment); **630** (radioactive wastes disposal); **642** (estuarine embayments); **684** (model for dynamic oceanography problems); **737** (pulpmill pollution problems); **753** (particulate organic carbon primary production); **758** (oceanic detritus); **774** (biotin assay method); **777** (tripping water bottles); **855** (sound speed in seawater); **857** (stilling well design); **858** (suspended organic matter review); **871** ("free" amino sugar assay)

SS 18, 296 (re protoplasm paleochemistry); **141** (tide reversal); **267** (oceanographic principles & applications); **326** (silicate determination method); **347, 349, 871, 1326** (seawater properties); **373, 432, 1098, 1137, 1260** (re biology, plankton); **431** (origin of oceans); **477** (reporting of constituents analyses); **485** (a derivation of Bjerknes' theorem); **593, 713** (polygonal graphing of data); **763** (re world crab distribution); **833** (automatic-closing dredge for very deep waters); **883, 961, 1075, 1097, 1138, 1154, 1196, 1310** (reports on recent advances); **907** (feedback systems); **1007, 1197, 1240** (sea science); **1074** (storm surges); **1116** (role in IGY); **1243, 1248, 1332** (re fisheries); **1271, 1311** (estuarine embayments); **1290** (energy transformations); **1327** (ocean current dynamics); **1363** (Canadian Oceanographic Information Service); **1364** (world oceanographic meeting at Halifax)

Oceanography, Pacific (northeastern coastal waters) (*see* page xv of Preface, *also* Oceanography) (*see also* International North Pacific Fisheries Commission)

C 1914–15: 133, **1:** 39, 71, 73 (Strait of Georgia); **1918–20:** 29, 35, **1:** 81 (Departure Bay); **7:** 295 (re gill net sinkage)

J 3: 43, 93 (Nootka Sound); **5:** 398, **11:** 14, 799, **18:** 1027 (Juan de Fuca Strait); **9:** 42, **13:** 7, **16:** 283, **20:** 939 (Barclay Sound region & Alberni Inlet); **10:** 125, **13:** 357, 647, **16:** 565 (whole B.C. coast); **11:** 48, **13:** 385, 647, **14:** 165, 945, **15:** 429, **20:** 1197 (Hecate Strait & Dixon Entrance regions; correction on **J 17:** 943); **11:** 501, 853, **13:** 581, **14:** 241, 321, 521, **15:** 91, 1065 (Strait of Georgia; corrections on **J 14:** 997); **11:** 853 (Seymour Narrows); **13:** 7, 273, **14:** 487, 605, **16:** 635, **18:** 907, **19:** 1, 921, **20:** 1109, **21:** 505, 1069 (fiord inlets); **14:** 783, **19:** 1163, **21:** 1289 (re pollution); **15:** 625 (climatic changes re fisheries); **15:** 794 (review of early work); **16:** 565 (Alaska coast); **17:** 337 (phosphorus forms, balance & cycle); **19:** 45, 657 (approaches to Vancouver Is.)

B 15: 7, **34:** 11, **80** (Strait of Georgia); **29, 83** (Barclay Sound region re pollution); **80** (re B.C. wood borers); **91:** 3 (Queen Charlotte Is. coast)

PRP 4: 3, **81:** 75, **83:** 42, **85:** 88, **90:** 16, **93:** 26, **94:** 19, **95:** 58, 59, **96:** 6, **97:** 14, **99:** 9, **102:** 5, **104:** 26, 30, **106:** 3, **107:** 24, **108:** 3, **112:** 10 (Strait of Georgia); **5:** 3 (re teredo control); **12:** 7, **96:** 3, **97:** 12, **98:** 13, **99:** 9, **100:** 8, **103:** 19 (mainland fiord inlets); **16:** 14, **20:** 14, **76:** 66, **95:** 58, **97:** 14, **101:** 23, **102:** 6, **104:** 26, **106:** 3, **109:** 3, **110:** 6, **114:** 13 (re pollution, chiefly from pulpmills; correction on **102:** 2); **22:** 3, **25:** 21 (effects of Japan Current); **23:** 16, **27:** 8 (Prince Rupert harbour re herring runs); **26:** 5, **31:** 16, **33:** 11, **85:** 88, **86:** 6, **90:** 16, **91:** 3, **92:** 6, **94:** 8, **95:** 51, **98:** 6, **102:** 5, **108:** 7 (lighthouse daily data); **26:** 5, **31:** 16, **32:** 14, **33:** 11, **34:** 13, **86:** 6, **88:** 53. **90:** 16 (W coast Vancouver Is.); **30:** 16,

81: 75, **88**: 53, **95**: 48 (Juan de Fuca Strait & approaches); **38**: 10, **96**: 15 (re herring catchability); **46**: 14 (re salmon mortality); **48**: 3 (re pilchard mortality); **76**: 66, **84**: 70, **101**: 23, **109**: 3 (Barclay Sound & Alberni Canal; correction on **102**: 2); **76**: 72, **91**: 3 (Chatham Sound); **88**: 53, **91**: 3, **100**: 18, **101**: 20, **103**: 23, **107**: 5, **108**: 18, **110**: 3 (Hecate Strait & Queen Charlotte Islands region); **90**: 16, **92**: 6, **98**: 6, **108**: 7, **114**: 13 (whole B.C. coast); **94**: 8, **100**: 6, **105**: 14, **108**: 15 (central B.C. coast); **102**: 6, **110**: 6 (Osborne Bay re pollution); **107**: 5 (re Dixon Entrance zooplankton distribution); **112**: 10 (re shellfish toxicity)

CNG 26: 13 (weekly broadcasting of daily coastal sea temperatures); **57** (tidal removal of pulpmill pollution in B.C.); **59** (effects of disposal and sedimentation of radioactive wastes)

CPO 1958-3 (weekly broadcasting of daily coastal sea temperatures); **1958-5, -9, -11, -12, 1959-2, -5, -7, -8, -12, -14, -16, -19, -22, -25, -26, -28, -30, 1960-1, -6, -10, -12, -14, -18, -22, -25, -26, -28, -30, 1961-1, -3, -4, -8, -20, -28, 1962-3, -12, -21, -23, 1963-1, -5, 1964-11** (monthly reviews of daily coastal sea temperatures); **1959-1, -13, -18, -29, 1960-7, -31** (coastal seaways cruises data); **1960-16, -24, 1961-12** (W coast Vancouver Is.); **1960-17, 1961-22, -23** (Hecate Strait oceanographic model); **1961-6** (Monitor Project); **1961-18** (Canadian Oceanographic Information Service); **1961-21, 1962-13** (primary productivity); **1964-7** (winter & spring sea surface temperatures from lighthouses); **1964-10** (B.C. coastal sea surface salinities)

S 56, 75, 83, 112, 376, 410 (Strait of Georgia); **123, 410, 643** (fiord inlets); **190, 642** (Juan de Fuca Strait); **344, 410, 483, 585, 590, 612, 773** (review reports); **345, 642** (estuarial mixing); **431, 510, 627, 643, 737, 743** (pollution, chiefly pulpmill); **586** (Queen Charlotte Sound); **630** (re radioactive wastes disposal); **684, 857** (Hecate Strait oceanographic model)

SS 340, 378, 379, 980 (Strait of Georgia); **372, 542, 591, 616, 707, 883** (résumé reports); **451, 1088, 1127** (fiord inlets); **931** (Alberni harbour oceanographic model); **980, 1156** (lighthouse data); **1100** (pollution in Alberni Inlet); **1168** (water structure); **1169** (surface waters); **1305** (re Fraser R. sockeye salmon migration); **1312** (pollution re fisheries); **1349** (re radioactive wastes disposal)

Oceanography, Pacific (northern and northeastern open waters) (*see* page xv of Preface, *also* Oceanography) (*see also* International North Pacific Fisheries Commission)

J 5: 398, **20**: 939 (off Juan de Fuca Strait); **12**: 1, **16**: 565, **18**: 311, 1145 (off whole B.C. coast); **15**: 851 (drift bottles); **16**: 351, 795, **17**: 221, **18**: 1145, **19**: 271, 657 (re distribution of animals); **17**: 61 (anomalous temperature increases), 91 (estuarine analogy), 337 (phosphorus cycle), 353, **18**: 1, 1073 (weathership station "P"); **19**: 1121 (mass transport machine computations); **20**: 119, **21**: 397, 941 (N region)

PRA 64: 16 (bathythermogram data from Panama Canal to Bering Strait)

PRP 22: 3, **25**: 21 (Japan Current effect); **30**: 16, **32**: 14 (off Juan de Fuca Strait); **32**: 13, **34**: 13 (off W coast Vancouver Is.); **81**: 79, **105**: 16, **107**: 11, 28, **111**: 22, **113**: 13 (N Pac. survey); **83**: 39, **84**: 59, **88**: 53, **92**: 6 (off B.C. coast); **107**: 3 (re zooplankton distribution), 12 (weathership station "P" data); **113**: 13 (re primary production)

CNG 17: 5, 10, 14, **20, 23** (water colour & temperature, re albacore fishery)

CPO 1958-1, -2, -4, -10, 1959-3, -9, -11, -15, -20, -21, -24, -27, 1960-3, -8, -11, -13, -21, -23, -29, 1961-2, -5, -7, -10, -15, -16, -24A, -26, 1962-5, -7, -10, -15, -17, -19, -20, 1963-4, -6, 1964-2, -3, -8, -9 (data from cruises from off Juan de Fuca Strait to weathership station "P", also at that station); **1958-6, -7, -8, 1959-6, -23, 1960-4, -15, 1961-11, -27, 1962-8, -9, -22** (NE Pac. cruises data); **1959-4, -10, -17** (data on seaward approaches to B.C. coast); **1959-20, 1960-5, 1961-21, -26, 1962-13** (re primary productivity);

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—
Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series*: **CAG**—Montreal; **CCG**—London;
CFI—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—
St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—
Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

1960-5 (re E subarctic plankton occurrences); **1960-16, -24, 1961-12** (offshore Vancouver Is.); **1960-19** (outlook for surface temperatures); **1961-6** (Monitor Project); **1961-9, -13, -14, -17, -24, -25, 1962-2, -4, -6, -11, -14, -18** (water transport calculations); **1961-18** (Canadian Oceanographic Information Service); **1962-16** (simplified dynamic height & potential energy anomaly calculations); **1962-22, -24** (subarctic & polar pack ice); **1964-5** (continuously recorded surface temperatures)

S 174, 345 (off Vancouver Is.); **410, 483, 585, 585A, 590, 612, 773** (review reports); **612** (physics, fertility); **630** (radioactive wastes disposal); **654, 655, 656, 657, 658, 769, 859** (re salmon stocks); **669** (subarctic upper zone features); **807** (seasonal temperature structure); **859** (temperature & salinity, dynamic height anomaly); **860** (subarctic region review)

SS 591, 616, 707 (reports on); **665** (meteorology re gradient currents); **883, 925, 961** (review reports); **1053** (8th Pacific Science Congress report); **1112** (U.S.S.R. plan to dam Bering Strait); **1136** ("Norpac" program); **1168** (water structures); **1169** (surface waters off B.C.); **1176** (drift bottle to Hawaii); **1239** (descriptive); **1271, 1311** (subarctic waters estuarine model); **1305** (re Fraser R. salmon migration); **1312** (pollution re fisheries); **1327** (ocean currents dynamics); **1349** (radioactive wastes disposal)

Oceanography, Pacific (northwestern waters) (*see* page xv of Preface, *also* Oceanography) (*see also* International North Pacific Fisheries Commission)

J 20: 119, **21**: 397, 941 (N Pac. to Japan)

CPO 1964-5 (continuously recorded surface temperatures, America to Asia)

S 669 (subarctic upper zone features); **807** (seasonal temperature structure); **859** (temperature & salinity, dynamic height anomaly); **860** (subarctic region review)

SS 1239 (descriptive)

Oceanography, subarctic (Hudson Bay, James Bay, Hudson Strait, Ungava Bay) (*see* page xv of Preface, *also* Oceanography *and* Oceanography, arctic) (*see also* "Calanus Series")

C 6: 455, 463, **7**: 91 (Hudson Bay)

J 9: 65, **11**: 98 (Ungava Bay); **13**: 41, **15**: 155, **16**: 403 (Hudson Bay and Strait)

B 88 (Hudson Bay, Hudson Strait, Ungava Bay, Labrador coast)

PRA 69: 18 (Hudson Bay & Hudson Strait)

S 304 (Canadian oceanographic interests); **316, 402, 469** (Hudson Bay); **361** (bathymetry & ecology); **379A** (rising sea temperatures); **420** (density inversions); **469, 483, 590, 674, 773** (review reports); **471** (submarine topographic effects on waters); **808** (*Calanus* as water movements & conditions indicator)

SS 183, 184 (Canadian Fisheries Expedition, 1914–15); **543, 1026** (Hudson Bay); **868, 937** (Ungava Bay); **883, 961** (review reports)

Ocinebra japonica (*see* Drill, Japanese oyster)

Octopoda (*see also* Octopus)

C 1917–18: 248 (Canadian)

Octopus (*Paroctopus apollyon*)

S 851: 62 (B.C. fishery & prospects)

Octopus (*Polypus hongkongensis*) (*Octopus hongkongensis*)

B 139 (re Strait of Georgia trawl fishery)

PRP 79: 35, **95**: 35 (as fish feed)

CNG 33 (re Strait of Georgia winter trawl fishery)

CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)

S 245 (B.C. edible)

Octopus hongkongensis (*see* Octopus)

Odense, Paul Holger

J 16: 53 (Atl. cod tropomyosin); **19**: 1095 (cod tropomyosin enzymic digestion); **20**: 1 (*Phocanema* codworm chemical analyses); **21**: 1397 (frozen cod polyphosphate treatment)

S 780 (vertical starch gel electrophoresis); **782** (carbonaceous fouling of catherometer filaments)

Odobenus divergens (*see* Walrus (Pacific))

Odobenus rosmarus (*see* Walrus, Atlantic)

Odonata (*see also* Dragonflies; Insects, aquatic)

C 1911-14(II): 53 (Go-Home Bay, Ont.)
S 200 (Cultus L. vicinity, B.C.)
SS 81, 106, 151 (nymphs); **82** (mutual sexual adaption); **105** (*Lestes* nymphs)

O'Donoghue, Charles Henry
C 1: 143, **3**: 47 (Vancouver Is. Bryozoa list); **1**: 411 (Vancouver Harbour *Eudistylia*), 455 (Departure Bay, B.C., starfish migration); **3**: 47 (Vancouver Is. Bryozoa list), 247 (*Membranipora villosa* early development)
S 8 (light effects on narcotized animals); **11** (new heliozoon, Vancouver Is.); **12**: 123, 131, 145, **30, 49** (Vancouver Is. nudibranchs); **35** (sixgill shark anatomy)
SS 222, 240, 241, 274 (Vancouver Is. nudibranchs); **329** (dogfish blood vascular system)

O'Donoghue, Elsie
C 1: 143, **3**: 47 (Vancouver Is. Bryozoa list); **12**: 132 (Vancouver Is. nudibranch spawn)

Odontopyxis trispinosa (*see* Poacher, pigmy)

Odontosyllis enopla; O. phosphorea (marine polychaetes)
J 7: 363 (lunar spawning periodicity)
SS 73, 129, 1280 (swarming)

Odour, perception and reaction to (*see also* Homing)
J 11: 107 (perception & orientation in fishes), 310, 472, **13**: 317, **19**: 327, **20**: 287, 1457 (Pac. salmons fry & adults); **15**: 685 (roach, for trinitrophenol); **21**: 373 (development & histology in grayling)
B 117 (Pac. salmon fry)
PRP 90: 21, **98**: 10 (homing chinook & coho salmon); **99**: 24 (guiding salmon fingerlings)
S 42, 444, 666, 846 (perception in spawning migratory Pac. salmons)

Odours in fish quality assessment (*see also* Deodorization; Quality)
J 12: 333, **13**: 31, 211, 292 (haddock & cod on trawler deck & in hold), **13**: 570 (redfish fillets), 864 ("bilgy", in cod, haddock & pollock); **14**: 617, 775 (classification of; correction on **14**: 998); **15**: 701, 717, 729 (cod & haddock fillets); **16**: 13, 21 (caused by *Pseudomonas*), 791, **17**: 811 (B.C. dogfish); **18**: 295, 303 (cod & haddock)
B 103: 4 (cause & avoidance of "bilgy")
PRA 58: 27 (cause & avoidance of "bilgy")
PRP 96: 20 (unusual odour in Pac. cod shipment)
CHN 8 (metal-catalyzed off-odours in Atl. groundfish)
S 403 (development in trawler holds); **532** (pre-wrapped fresh & frozen fillets); **540** (wrapped antibiotic-treated fillets); **565** (seaweedy, in cod & haddock); **579** (stored Atl. oysters); **744** (of metal-induced rancidity)

Offal (*see also* Oils and fats: fish offal; Viscera; Wastes recovery)
PRA 16: 11 (glue from); **65**: 24 (acid ensilage from); **67**: 29 (protein concentrate from)
PRP 86: 66 (meal, from freshwater fishes); **105**: 27 (preservation of salmon-offal stickwater)
CVI 9, 12, 13 (proportions of & analyses, freshwater fishes); **10, 16** (by-products from); **11** (essential amino acids of meal)

Ogac (*see* Cod, Greenland)

Ogac Lake, Baffin Island (semi-tidal)
S 762: 89 (*Sagitta* & *Gadus*); **791**: 105 (relict cod stock)

Ogden, Eric
S 119 (urea physiological significance in fish)

Ogrefish (*Anoplogaster cornuta*)
B 155: 228 (mention of)

O'Hanlon, M.
SS 1325, 1361 (ICNAF Canadian groundfish length frequency data)

Oidiphorus (*see* Eelpouts)

Oilfish (*Ruvettus pretiosus*) (ruvetto; scour-fish)

J 16: 509 (Sable Is. Bank record, erroneously called escolar)

B 155: 276 (full description)

Oils and fats: fish body (composition; processing; products) (*see also* Lipids) (For fatty acid structure, *see* Acids, fatty; for deterioration during storage of fish, etc., *see* subjects such as Acids, fatty; Hydrolysis of oil; Meals; Quality; Rancidity; for amounts in fish, *see* Composition, chemical; Nutritive value; *also* names of fishes; for vitamins, *see* Vitamin A; Vitamin D; Vitamins A + D. *See also* other cognate subjects, e.g. Decolorization; Esters; Fatness; Hydrogenation; Lipase; Lipoxidase; Paint; Pigments; Unsaponifiables)

C 6: 365 (pilchard: drying rate apparatus); **7:** 413, 521, **8:** 321 (pilchard: processing); **8:** 507 (iodine value re composition)

J 1: 487 (pilchard: oxidation rate); **2:** 13 (pilchard: films structure & properties), 285 (ester composition calculation); **4:** 55 (pilchard: pigments identification), 59, **21:** 841 (pilchard: fatty acids structure); **6:** 109 (pilchard & herring: essential fatty acids); **18:** 93, 113 (in liquefied herring products), 865 (fatty alcohols from); **20:** 591 (Atl. capelin), 1551 (saury); **21:** 367 (Atl. cod: fatty acids)

B 37, 59, 89 (composition, technology & uses; *see* their indexes); **46** (pilchard: as animal feeding oil)

PRA 32: 11 (rapid assay method for, in fish tissue); **66:** 16 (changes in, during salt fish processing); **71:** 17, **73:** 37 (hydrolysis in frozen Atl. cod)

PRP 3: 3, **5:** 9, **18:** 7, **27:** 11, **88:** 67 (changes in cold-stored products); **4:** 6, **10:** 17, **24:** 3 (pilchard: drying properties); **9:** 15 (as food); **10:** 14, **19:** 7, **20:** 6, **21:** 18, **28:** 6 (pilchard: hydrogenation); **11:** 5 (pilchard: decolorization); **16:** 3, **30:** 11 (free, in canned salmon); **18:** 5 (hydrolysis in canning of salmon); **24:** 23 (cleaning drums for); **25:** 13, **26:** 16, **28:** 6 (pilchard: uses); **30:** 19 (pilchard: composition); **31:** 14 (pilchard: phenolated); **32:** 17, **36:** 16 (pilchard & herring: bulk measurement, freezing & melting points, coefficient of expansion); **33:** 8 (pilchard, herring & dogfish: yields & vitamins); **39:** 3 (pilchard: yields); **44:** 4, **45:** 21, **63:** 43 (B.C. research progress on processing); **55:** 15 (pilchard: rapid cold test); **71:** 9 (by-products); **75:** 48 (whitefish: analysis); **93:** 3, **94:** 24 (B.C. herring: composition); **97:** 11 (iodine content)

CHN 7 (air-blowing to partly polymerize)

CVI 1 (pilchard: varnish base from)

NSB 3, 5, 11 (Nfld. fishes)

S 87 (pilchard: properties); **350** (isomerization procedure); **479, 687** (Atl. herring: commercial production of methyl esters); **504** (re colour of canned sockeye salmon); **593,** 641 (B.C. herring: re chick cholesterol metabolism)

SS 475 (Pac. coast researches, chiefly on pilchard); **604** (pilchard: composition); **605** ("oil from the sea"); **698, 728** (factors affecting measurement of bulk quantities); **906** (B.C. herring: review)

Oils and fats: fish egg

J 6: 109 (sockeye salmon: essential fatty acids); **21:** 469 (Atl. cod: fatty acids)

B 89: 66, 323, 325 (salmon: characteristics)

PRP 22: 15, **71:** 5 (B.C. salmon: lecithin in; uses)

Oils and fats: fish liver (*see also* Acids, fatty; Liver; Unsaponifiables; Vitamin A; Vitamin D; Vitamins A + D)

C 7: 405 (lingcod); **8:** 265 (B.C. salmons & steelhead)

J 4: 174, 396, **6:** 113 (B.C. halibut); **4:** 174, 312, **6:** 113, 326, **7:** 389, **18:** 377, 865 (B.C. dogfish); **4:** 405 (Pac. cod), 472 (rockfish, sablefish & lingcod); **5:** 428 (pilchard, herring, salmon & tullibee); **11:** 357 (Atl. cod: vitamin A); **17:** 903, **18:** 377 (effect on human and animal blood cholesterol levels); **18:** 865 (fatty alcohols from); **19:** 605 (converting free fatty acids to esters), 839 (air-blowing of Atl. cod), 1081 (free fatty acids of cod); **20:** 89 (free fatty acids of air-blown cod); **21:** 319 (Atl. cod: component fatty acids)

B 25: 27 (haddock); **37, 59, 89** (production, vitamin potencies, etc., *see* their indexes); **54:** 23 (lingcod)

PRA 1: 9, **32:** 5 (from stored chilled or frozen Atl. cod livers); **21:** 5, **29:** 12 (extractor); **29:** 11 (recovery from pressed liver residue), 17 (swordfish & tuna: vitamin A), 19 (from sunrotting of cod livers); **34**: 19 (cod: alkali refining); **35**: 14 (Atl. dogfish: vitamin A); **48**: 4, **49**: 3 (new liberation process from cod livers); **68**: 17 (from preserved cod livers)

PRP 12: 3 (halibut, salmon, lingcod, Pac. cod, dogfish); **16**: 7, **44**: 4, **45**: 21 (research progress); **22**: 8, **33**: 7 (from low-oil-content livers); **26**: 17 (cods, flounder, perch, whiting, skate); **31**: 3, **33**: 8, **34**: 3, **53**: 7, **56**: 11, **59**: 20, **63**: 32, 43, **73**: 48, 57, **76**: 63, **77**: 116, **110**: 13 (B.C. dogfish); **33**: 8 (herring, halibut, pilchard); **35**: 12, **55**: 9, **61**: 16 (B.C. sharks); **36**: 22, **38**: 15 (B.C. cods); **39**: 3 (pilchard); **46**: 12, **53**: 7, **56**: 11, **58**: 13, **59**: 20, **63**: 32, **65**: 67, **71**: 5 (unsaponifiables); **48**: 9 (halibut: history of industry); **51**: 19 (ratfish); **54**: 4 (hake); **58**: 3 (B.C. dogfish & shark: industry), 13 (sleeper shark, ratfish, goosefish, marbled sculpin); **61**: 6, **64**: 64, **68**: 43, **69**: 74, **71**: 12, **72**: 41 (flatfishes); **63**: 43 (coefficient of cubic expansion); **75**: 48 (whitefish); **82**: 20 (value to fishermen as vitamin A sources); **88**: 51 (cholesterol from halibut); **103**: 11 (halibut: stability)

CGR 8 (new extraction process from cod livers)

CHN 7 (air-blowing of cod, for lubricant additive)

CVI 6 (B.C. dogfish & halibut); **8** (B.C. flatfishes); **9**, **12**, **13** (various freshwater fishes)

NRB 15 (Atl. dogfish)

NSB 3 (Atl. cod)

S 55, **86** (dogfish); **349** (Atl. cod, sardine, etc.); **593**, **613**, **617** (re chick anti-hypercholesterolemia); **819** (fatty acid distribution in cod, halibut, skate); **864** (dietary fatty acid distribution pattern retention in cod & rat)

SS 362 (dogfish: vitamin D); **530** (pilchard–dogfish blend for medicinal use); **685** (yield & vitamin A from oil-poor livers); **694** (chemistry & utilization); **782**, **862** (unsaponifiable determinations in dogfish); **792** (Maritimes fishes: processing); **793** (B.C. fishes: processing); **981** (Atl. cod: processing)

Patent—Canadian No. 484,092 (treatment of fish livers)

Oils and fats: fish offal (*see also* next heading)

B 89: 199 (production process)

PRP 61: 6 (from gurry); **63**: 43 (salmon: coefficient of expansion); **99**: 6 (salmon: fatty acids)

Oils and fats: fish viscera (excluding liver) (*see also* preceding heading; *also* Oils and fats: fish liver; Viscera; Vitamin A; Vitamin D; Vitamins A + D)

J 4: 396 (halibut), 405 (Pac. cod), 472 (rockfish, sablefish, lingcod); **5**: 428 (B.C. fishes)

B 25: 27 (haddock); **37**: 71, **59**: 222, **89**: 198, 346, 347 (technology and vitamins; *see also* their indexes)

PRA 29: 17 (swordfish & tuna)

PRP 33: 8 (halibut: yield & vitamin A potency); **35**: 13 (halibut & sablefish: yield & vitamin A); **36**: 22 (B.C. cods: yield & vitamin A); **38**: 15 (sablefish: yield & vitamin A); **48**: 9 (halibut: industry); **61**: 6 (lemon flounder); **75**: 48 (whitefish: yield & vitamin A); **80**: 47 (salmon); **82**: 20 (value to fishermen as vitamin A sources)

SS 659 (halibut & sablefish: vitamins); **685** (yield & vitamin A from oil-poor viscera); **792** (processing from Maritimes fishes); **793** (B.C. fishes: processing)

Oils and fats: invertebrate (*see also* note under heading Oils and fats: fish body)

J 18: 1001 (content in marine phytoplankton); **21**: 747 (origin in diatoms), 1035 (of scallop muscle), 1379 (marine plankton)

B 89: 347 (crab viscera, sea cucumber, starfish)

S 864 (dietary fatty acid distribution pattern retention in lobster flesh)

Oils and fats: marine mammalian (composition; processing; products) (*see also* note under heading Oils and fats: fish body; *also* Ambergris; Blubber; Spermaceti)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 7: 471, **8**: 189 (seal: purification); **18**: 865 (harp seal: physical constants & fatty alcohols from); **20**: 245 (bottlenose whale)
B 37, 59, 89 (composition, technology, uses; *see* their indexes)
PRA 37: 9 (seal liver: vitamins); **57**: 3 (seal: fractionation); **59**: 27 (soap from seal oil)
PRP 14: 14 (B.C. porpoise); **36**: 10 (hair seal & sea lion blubber & liver); **51**: 18, **79**: 40, **83**: 28 (whale liver)
CVI 10, 14 (Pac. whales liver & blubber)
S 810 (harp seal blubber: fatty acids distribution); **819** (seal & whale blubber: fatty acids distribution); **840** (milk of gray seal)
SS 936 (seal oil hydrogenation)

Oils, fats and lipids (determination methods)
J 13: 791 (acetone–water extraction); **16**: 63 (solvent–water ratio effects)
B 37, 59, 89 (technology and specifications re marine animal oils; *see* their indexes); **125**: 129 (particulate aquatic organic material)
S 577 (rapid total lipid extraction method)
SS 782, 862 (for dogfish liver oil unsaponifiables)

Oils, fats and lipids (in biochemical processes) (*see* Lipase; Lipids; Lipoxidase; Phospholipids)

Oithone similis
SS 588 (biology, Bay of Fundy)

Okanagan Lake, B.C., and Okanagan Region Lakes
B 55: 47 (predator–prey relations); **56**: 8 (physical & chemical conditions), 17 (bottom fauna), 27 (fishes), 39 (whitefish), 51 fish cultural problems)
PRP 28: 11 (survival of transplanted whitefish)
SS 640 (fishes)

O'Law Lakes, Upper and Lower, N.S.
PRA 42: 7 (brook trout angling yield)

Oldroyd, Ida Shepard
SS 203 (new mollusc species, Departure Bay, B.C.); **562** (2 new Pac. coast Nuculanidae)

Olfactory perception and response (*see* Odour, perception and reaction to)

Oligochaeta (*see also* Annelida)
J 9: 204 (in benthos of Cultus L., B.C.)

Oligocottus maculosis (*see* Sculpin, tidepool)

Oligocottus rimensis (*see* Sculpin, saddleback)

Oligocottus snyderi (*see* Sculpin, fluffy)

Oliver, Donald Raymond
J 17: 607 (bottom fauna, Lac la Ronge, Sask.)

Olsen, Steinar Johannes
J 16: 339 (herring gillnet mesh selectivity; correction on **16**: 930); **17**: 211 (sound scatterers in Nfld. waters); **18**: 31 (Nfld. herring biology)

Omand, D. N.
SS 946 (rearing yellow pikeperch fry)

Omochelys cruentifer (*see* Eel, snake)

Oncorhynchus (*see also* Salmon; Salmon, inclusive Pacific species)
B 94: 6 (arctic & subarctic distribution)
S 551 (origin & speciation)

Oncorhynchus gorbuscha (*see* Salmon, pink)

Oncorhynchus keta (*see* Salmon, chum)

Oncorhynchus kisutch (*see* Salmon, coho)

Oncorhynchus masou (*see* Masu)

Oncorhynchus nerka (*see* Salmon, sockeye)

Oncorhynchus nerka kennerlyi (*see* Kokanee)

Oncorhynchus rhodurus (*see* Salmon, Biwa)

Oncorhynchus tshawytscha (*see* Salmon, chinook)

Oneirodes bulbosis (*see* Dreamer)

Onion eye (*see* Grenadier, roughhead)

Onofrey, Eve (*see also* Roberts, Eve)
J 17: 323 (maturing coho salmon biochemistry)

PRP 96: 11, **97**: 18 (marine bacteria nutrition & metabolism); **98**: 22 (amines toxicity to bacteria)
S 379 (amines antibacterial action); **388, 432, 478, 487, 516, 521** (marine bacteria nutrition & metabolism)

Ontario (The following is not an exhaustive listing; *see also* Algonquin Park; Erie, Lake; Great Lakes; Hudson Bay; Huron, Lake; Limnology; Oceanography, subarctic; Ontario, Lake; Superior, Lake; *also* names of individual localities, bodies of water, rivers *and* other cognate subjects, e.g. Fishes, freshwater)
C 1917–18: 75 (freshwater mussels); **2**: 135 (trout planting in 2 creeks); **6**: 165 (Bay of Quinte whitefish), 445 (whitefish)
J 11: 362 (Duffin Creek salmon); **16**: 147 (stream fishes & invertebrates)
S 50 (lake Entomostraca)
SS 226 (Cladocera of SW); **854** (freshwater fish conservation)

Ontario, Lake (*see also* Great Lakes)
C 1902–05: 22 (effects of dynamite), 46 (effects of sawdust pollution); **6**: 225 (ciscoes)
J 9: 325 (temperature); **13**: 547 (planting whitefish fry); **18**: 617 (energy budget); **20**: 597 (artificial propagation & weather re whitefish fishery)
SS 409 (ciscoes); **917** (re-introduced Atl. salmon)

Oolachon; Oolichan (*see* Eulachon)

Opah (*Lampris regius*) (*L. luna;* Atlantic moonfish; Jerusalem haddock; Moonfish (Pacific))
J 20: 1097 (NW Atl. record)
B 68: 138, **68R**: 171 (full description of Pac.); **89**: 68 (liver oil vitamin A); **155**: 226 (full description of Atl.)
PRP 25: 12 (first B.C. record)

Opaleye (*Girella nigricans*)
J 15: 611 (preferred temperature)
S 445 (lethal temperature limits)

Operculum
J 20: 347 (organogenesis in brook trout)

SS 331 (movement mechanism in *Balanus*)

Ophicephalus (an India fish)
J 16: 1 (fillet preservation by antibiotic)

Ophiodon elongatus (*see* Lingcod)

Ophiuroidea (*see* Starfish, brittlestar)

Orchomenella pinguis (*see* Flea, sea)

Orcinus orca; O. rectipinna (*see* Whale, killer (Atlantic); whale, killer (Pacific))

Organic compounds in natural waters (*see also* Limnology; Oceanography)
J 14: 33 (& in effluents & sediments)

Organolepsis (*see* Odours; Quality; Sound; Taste; Taste tests; *also* headings listed under Reactions of organisms)

Organs (*see also* names of organs; *also* Physiology; Viscera)
S 520 (weights in spawning migratory Pac. salmon)

Oru (type of fishing boat)
SS 1407 (mechanization of, Ceylon)

Oryzias latipes (*see* Medaka)

Osborne Bay, B.C.
PRP 102: 6, **110**: 6 (oceanography re pulpmill effluent)

Osburn, Raymond Carroll
C 7: 361 (Bryozoa of Hudson Bay & Strait)

Osmeridae (*see* Smelts)

Osmerus dentex (*see* Smelt, toothed)

Osmerus mordax (*see* Smelt, American)

Osmophilism
J 11: 901 (of salt cod "dun" mould)

Osmoregulation (*see* Acclimation; Salinity, reactions to)

Osmosis
PRP 17: 8 (in dry salting of herring)

C—Contr.; **J**—Journal; **B**—Bulletin: **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series.* **CAG**—Montreal; **CCG**—London; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl. **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo;

Osteology (*see also* Bone; Otoloth; Vertebrae, etc.)
J 18: 679 (salmonids)
B 136 (of Pac. salmons)
PRP 30: 3 (hooked-jaw development in maturing salmon)
S 594 (of seals re paleoclimatology)

Ostracoda
C 1917–18: 249 (Canadian); **2**: 295 (distribution, Canadian Atl.); **6**: 397 (Vancouver Is.)
J 9: 16 (Vancouver Is.); **11**: 245 (Belle Isle Strait); **21**: 555 (*Conchoecia alata* subspecies), 639 (subsampler for)
PRP 107: 3 (NE Pac. distribution)
S 9 (new *Cyclocypris* species, N.B.); **50** (ecology, etc. of Entomostraca); **104** (ultraviolet light effect on)

Ostrea edulis (*see* Oyster, European)

Ostrea gigas (*see* Oyster, Pacific)

Ostrea lurida (*see* Oyster, Olympic)

Ostrea virginica (*see* Oyster, Atlantic)

OTC (oxytetracycline) (*see* Antibiotics)

Otoliths, age determination from
J 10: 326, **13**: 847 (arctic char); **11**: 171 (yellowtail flounder); **13**: 467, **15**: 1229, 1239 (haddock; correction on **16**: 929); **15**: 295 (capelin); **17**: 775, **21**: 70 (Atl. cod); **18**: 47 (burbot: preparation for storage); **19**: 335 (photography of Pac. halibut), 339 (Pac. halibut); **20**: 417 (burbot), 1489 (minke whale, from ear plugs); **21** (asymmetrical pair in an Atl. cod)
B 4: 5 (muttonfish)
PRP 40: 17 (eulachon); **63**: 35, **87**: 27 (lemon sole; rock sole); **78**: 3 (Pac. salmons & steelhead trout)
CNG 30 (butter sole)
NRB 17: 94 (Atl. capelin)
S 731 (redfish)
SS 416 (pilchard)

Otter, sea (*see* Sea otter)

Otter trawl (*see* Trawl, otter)

Ouananiche (*see* Salmon, Atlantic; Salmon, Atlantic landlocked)

Oulachon (*see* Eulachon)

Outram, Donald Noel
J 21: 1317 (B.C. herring spawning)
PRP 87: 32 (herring retention & spawning); **93**: 13 (herring spawning re population abundance); **111**: 9 (herring spawn losses by bird predation)
CNG 37, 42, 46, 50, 56, 60, 69, 70, 71 (B.C. herring spawning surveys, 1955–63); **40** (development of herring eggs); **44** (identification of marine plants); **63** herring biology, feed & fishery)
S 343 (Vancouver Is. herring investigation results); **397** (Vancouver Is. herring population studies); **464, 500** (B.C. herring stocks status)
SS 1338 (herring spawning aerial survey)

Ouzel, water (*Cinclus mexicanus*)
SS 505 (predation on pink salmon)

Ova (*see* Eggs; Embryology; Spawning)

Ovaries (*see also* Eggs)
J 17: 113, 347, 565 (cholesterol, histidine, P compounds, creatine, inositol, etc. in sockeye salmon; corrections on **17**: 943, 944); **20**: 899 (atresia, of brook trout); **21**: 757 (guppy oocytes size groups)

Overfishing (*see* Effort and intensity of fishing)

Owikeno Lake, B.C.
J 15: 867 (limnology; sockeye salmon production)

Oxidases (*see* Enzymes; Oxidation)

Oxidation (*see also* Antioxidant; Lipoxidase; Rancidity)
B 59, 89 (of marine animal oils; *see* their indexes)
PRP 3: 3, **44**: 4, **45**: 21 (of oils); **4**: 6, **10**: 7, **24**: 3 (of oils to form paint films); **18**: 7, **27**: 11 (causing "rustiness" of halibut); **76**: 63, **77**: 116 (of liver oils re vitamin A)
CVG 24 (of oil in herring meals: nutritional significance)
S 424 (of frozen fish)

Oxygen, dissolved (*see also* Anoxia; Lethal limits (other than temperature); Limnology; Oceanography; Pollution; the following list does not include the many references to results of determination of dissolved oxygen in natural waters)

J 11: 933, **15**: 229 (Pac. salmon eggs requirement; corrections on **16**: 385, 386); **12**: 387 (resistance & tolerance of trout; correction on **12**: 942), 618 (brook trout requirements), 706 (in gravel spawning beds), 899 (lethal levels after exercise of various fishes); **13**: 247 (lobster reactions to); **14**: 783 (effluent effects on requirement); **15**: 559 (effect on poison toleration), 1189 (& temperature acclimation of scallops); **16**: 175 (effect on blood & respiration of fishes); **18**: 463 (in brown lake water); **19**: 1163 (amphipods in low-oxygen marine waters); **20**: 273 (Atl. cod requirements), 387 (resistance of crustaceans to low concentrations), 525 (effect on resistance of coho salmon to toxins); **21**: 505 (re B.C. fiord primary productivity), 1183 (requirements re young sockeye salmon swimming speed)

B 125: 23 (determination method, for seawater; revised edition in 1965)

PRA 4: 14 (affected by fertilizing ponds); **62**: 24 (re holding lobsters in seawater)

PRP 41: 14, **46**: 14, **65**: 70, **88**: 72, **109**: 3 (re sudden or mass mortalities of fish); **96**: 6 (in Strait of Georgia waters); **99**: 9 (in B.C. mainland inlets waters), 20 (sampling for concentration in gravel spawning beds); **110**: 3 (Hecate Strait region)

CSG 21 (requirement of lobsters)

S 125 (saturation in lakes: critique of measures); **347** (semi-micro determination apparatus); **503** (re sockeye salmon environmental stress)

SS 508 (of fertilized waters)

Oxylebius pictus (*see* Greenling, painted)

Oxytetracycline (OTC) (*see* Antibiotics)

Oyster, Atlantic (*Crassostrea virginica*) (*Ostrea virginica*)

C 1906–10: 217, **1915–16**: 53 (P.E.I. culture); **1906–10**; 233 (larvae recognition in plankton), 281 (Passamaquoddy Bay culture & industry); **1914–15**: 55 (P.E.I. barren oyster grounds), 145 (southern N.B. culture possibilities); **7**: 283 (sex reversal)

J 2: 477 (proximate analyses & glycogen content); **4**: 287 (larval life); **5**: 253 (temperature & salinity effect on condition), 361 (sex reversal); **6**: 209 (shell deposition, structure & quality), 449 (re-laying & transferring effect on condition), 498 (*Polydora* mud-blister worm in); **7**: 96 (thiaminase in), 545 (water circulation effect on growth); **12**: 270 (spatfall; larval behaviour); **13**: 47 (analyses; freezing & storage of meats); **15**: 1140 (review of investigations); **16**: 887 (effect of farmland drainage on P.E.I. beds; correction on **17**: 943); **21**: 1155 (introductions to Pac. coast), 1519 (sterol metabolism)

B 22 (history, cultivation, etc. in Malpeque Bay, P.E.I.); **34**; 29, 33 (culture in B.C.); **44** (storage in shell); **48** (spat rearing on trays); **60** (farming); **77** (Malpeque Bay larvae); **128** (mechanical harvester); **131** (all aspects of farming in Maritimes)

PRA 2: 9 (Malpeque Bay); **5**: 3 (sex reversal); **5**: 7, **7**: 8, **8**: 3, **27**: 8, 13, **29**: 15 **32**: 8, **35**: 11, **45**: 6, **68**: 3, **69**: 7 (culture); **8**: 3 (spat production & failure); **10**: 3 (survival of frozen); **16**: 10 (development); **17**: 6 (sex ratio); **27**: 13 (quicklime to kill starfish on beds); **28**: 5 (mopping to remove starfish); **37**: 14 (predation by drill); **65**: 3 (mortality); **68**: 3, **69**: 7 (effects & control of boring sponge); **71**: 21 (resource), 27 (European)

PRP 20: 16, **23**: 18 (composition & nutritive value, as matured in B.C.)

CFI 25 (canning)

CNG 64: 25 (productive capacity)

COF 1–19 inclusive (a series on many aspects of Maritimes culture & farming; *see* Circulars, Oyster Farming Series, in list of titles)

CSG 6 (green-gilled); **23** (control of eelgrass on beds); **27** (old & new mortalities); **28** (restoration of fisheries); **29** (rehabilitation of depleted beds); **31, 34** (epidemic disease; rehabilitation transfers); **32, 41** (list of publications for growers); **36** (spat collecting & producing bedding oysters)

CVI 17 (thiamin in)

S 5 (mud-blister worm effects on); **277, 279** (green-gilled); **283, 648** (P.E.I. disease mortalities); **474** (digestive tract anatomy);

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax, **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

475 (sterols); **496** (removing intact from shell); **538** (attack by boring sponge); **561** (gastric shield composition); **579** (organoleptic condition of live, after storage); **678** (rehabilitation of disease-depleted populations); **829** (gonad cyclic changes)

SS 20, 410, 436, 1011, 1012, 1222 (general); **21, 32, 40** (larvae & spat); **56, 57, 79, 624** (conservation & development); **448** (crystalline style oxidase); **746** (bacteria of hibernating); **954** (effect of eelgrass on beds); **1110, 1253, 1337** (hydraulic escalator dredge harvester); **1177** (transplant from P.E.I. to N.B. & N.S.); **1386** (first Canadian hatchery)

Oyster, European (*Ostrea edulis*)

PRA 71: 27 (trial introduction to Canadian Maritimes)

S 648 (epizootics in Canadian transplants); **760** (trial transplant to Canada, re growth & parasites)

SS 1179 (transplant to N.B.)

Oyster, Japanese (*see* Oyster, Pacific)

Oyster, Olympia (*Ostrea lurida*) (*see also* Oysters (Pacific in general))

J 2: 477 (proximate analyses; glycogen); **15**: 529 (predation by *Ocinebra* drill); **21**: 205 (parasitic *Mytilicola orientalis* copepod)

B 34: 13, 32 (biology; culture; commerce)

PRP 20: 16 (analyses); **23**: 8 (seasonal analyses); **31**: 6 (spat collectors); **56**: 3 (spatting)

S 245: 42 (description)

SS 99 (embryology); **448** (crystalline style oxidase); **537** (mantle & gill structure & function)

Oyster, Pacific (*Crassostrea gigas*) (*Ostrea gigas;* Japanese oyster)

J 2: 477 (proximate analyses; glycogen); **15**: 529 (predation by *Ocinebra* drill); **21**: 1155 (introduction & distribution in B.C.), 1481 (identification of off-odour)

B 34 (biology, culture & commerce, in B.C.)

PRP 15: 3 (breeding in Ladysmith Harbour, B.C.); **19**: 14 (small-scale canning of); **20**; 16, **53**: 9 (analyses; nutritive value); **22**: 19, **40**: 8 (larvae distribution); **23**: 18 (seasonal analyses); **27**: 6 (feeding rate); **29**: 16 (artificial stimulation of spawning); **31**: 6 (spat collectors); **40**: 6 (canned smoked); **43**: 8, **102**: 20 (propagation); **56**: 3 (spatting); **61**: 16 (reproduction); **81**: 83 (canned soup & stew); **105**: 12 (temperature & antibiotic re storage of shucked); **107**: 7 (raft culture); **112**: 10 (first record of toxic condition in B.C.)

CNG 64: 51 (productive capacity)

S 132, 581 (B.C. culture); **186** (glycogen analysis method); **245**: 82 (description); **406** (new sterol in); **453, 851**: 59 (B.C. fishery); **475** (sterols); **580** (setting prediction); **813** (seed mortality); **844** (sperm deoxyribonucleic acid); **880** (nucleotides of)

SS 289 (culture); **448** (crystalline style oxidase); **537** (mantle & gill structure & function)

Oyster, rock (*Pododesmus macroschisma*)

S 245: 82 (description of B.C.)

Oyster drills (*see* Drill; Oyster)

Oysters (Pacific in general)

SS 101 (report on beds); **410, 585** (industry); **779, 801** (biological investigations); **1262** (distribution)

Ozonolysis

B 89: 123 (of oils)

S 662 (of unsaturated fatty acids)

P

Pacific Ocean (*see* Ocean; Oceanography, Pacific; *also* International North Pacific Fisheries Commission)

Pacific Oceanographic Group (*see also* the Annual Reports of the Board; *also under* Circulars of the Pacific Oceanographic Group in the list of titles of publications)

S 344 (review of work, 1938–52)

Packaging

PRP 24: 23 (drums: cleaning for containing fish oils); **42**: 8 (bottles: for preserved salmon-egg bait); **43**: 3 (shrimps for freezing); **56**: 12 (jars: for preserved

fish bait); **58**: 20 (jars: for marinated herring); **114**: 3 (insulated cartons: for air transport of fresh fish)
CVG 23 (plastic films for frozen fish); **31** (plastic- or aluminum-lined cartons for frozen fish); **32** (herring meal in bulk)
S 532, 540 (pre-wrapping of fillets)
SS 935 (summary of studies); **1015** (commercial)

Paddlefish (*Polyodon spathula*)
C 1911–14(II): 10 (Georgian Bay, Ont.)

Pagophilus groenlandica (*see* Seal, harp)

Pagurus (*see* Crabs, hermit)

Paint from fish oils (*see also* Varnish from fish oils)
C 6: 372 (apparatus for drying-rate tests); **8**: 321 (from bodied pilchard oil)
J 1: 487, **2**: 13 (from pilchard oil)
B 37: 12, **59**, **89** (from pilchard & herring oils; *see* their indexes)
PRP 4: 6, **10**: 17, **25**: 13 (pilchard oil); **24**: 3 (properties of pilchard oil films); **31**: 14 (phenolated pilchard oil)

Palatability (*see also* Quality; Taste tests)
C 1918–20: 128 (of selachian fishes); **7**: 57 (haddock as dog feed)
J 7: 449, **17**: 1, **21**: 577 (Atl. cod fillets); **20**: 1153 (porbeagle flesh)
B 1: 12 (plaice); **2**: 22 (lumpfish); **3**: 9 (angler); **4**: 10 (muttonfish); **10**: 17 (lobster paste); **68, 68R** (various commercial & other B.C. marine fishes); **155** (various commercial & other Canadian Atl. marine fishes)

Paleochemistry
SS 18 (of ocean re protoplasm); **296** (of ocean re invertebrate body fluids & tissues); **431** (re origin of ocean)

Palinurichthys perciformis (*see* Barrelfish, American)

Pallasina barbata aix (*see* Poacher, tubesnout)

Paloheimo, Jyri Errki
J 15: 749 (estimating natural & fishing mortalities), 1371 (cod & haddock mortality rates); **18**: 645 (mortality estimation mathematical studies); **20**: 13 (sampling catch of research vessel), 59 (estimating lobster population sizes)

Palometa simillima (*see* Pompano, Pacific)

Pancreas (*see also* Insulin; Islets of Langerhans)
C 7: 1 (skate pancreatic secretion)
PRP 81: 86 (insulin from whale)
S 17 (re other insulin sources in fishes); **22** (pentose compounds in); **99** (skate pancreatic secretion)
SS 211 (nucleotides in dogfish)

Pandalids (*see* Prawn; Shrimp; Shrimps)

Pandalopsis (*see* Shrimp; Shrimps (Atlantic); Shrimps (Pacific))

Pandalopsis dispar (*see* Shrimp, sidestripe)

Pandalus (*see* Shrimp; Shrimps (Atlantic); Shrimps (Pacific); *also* Prawn)

Pandalus borealis (*see* Shrimp, pink)

Pandalus danae (*see* Shrimp, coonstripe)

Pandalus hypsinotus (*see* Shrimp, humpback)

Pandalus jordani (*see* Shrimp, smooth pink)

Pandalus montagui (*see* Shrimp, striped pink)

Pandalus platyceros (*see* Prawn)

Panel, taste (*see* Taste tests)

Panope generosa (*see* Geoduck)

Pantopoda (*see* Pycnogonida)

Pantosteus jordani (*see* Mountain-sucker, northern)

Pantothenic acid (*see also* Vitamin B group)
J 12: 643 (in fish & mammalian livers); **13**: 875 (in dried fish viscera meals)

Panulirus (*see* Lobster, spiny)

Paphia bifurcata
J 4: 53 (new Vancouver Is. clam species)

Paphia philippinarum (*see* Clam, Japanese littleneck)

Paphia pullastra, P. staminea (*see* Clam, littleneck)

Paralepis brevis brevis (*see* Barracudina, short)

Paralepis coregonoides borealis (*see* Lancetfish, scaled)

Paralepis rissoi krøyeri (*see* Barracudina, white)

Paralichthys dentatus (*see* Flounder, summer)

Paralichthys oblongus (*see* Flounder, four-spot)

Paraliparis copei (*see* Seasnail, blacksnout)

Paraliparis deani (*see* Snailfish, prickly)

Paralithodes
C 7: 337 (new & other B.C. species)

Paralithodes camtschatica (*see* Crab, king)

Paralysis, Chastek
J 7: 94 (in fox, due to thiaminase in rations); **11:** 529 (in fish)
B 92 (in mink)

Parasites; Parasitization (*see also* classifications of parasitic organisms, e.g. Amphipoda; Cestoda; Copepoda, parasitic; Isopoda; Nematoda; Protozoa; Trematoda; *also* Lamprey; Leeches; *Phocanema;* Salmon-lice; *Triaenophorus;* Whale-lice)
C 1917–18: 149 (*Bacillus salmonis* in Atl. hatchery salmon), 169 (fungus on Atl. hatchery salmon); **5:** 193 (Saprolegniaceae physiology)
J 8: 207 (of Great Slave L. fishes); **11:** 267 (of sea mammals; correction on **16:** 385); **11:** 319 (amphipods on B.C. whales; correction on **16:** 385); **11:** 673 (of B.C. freshwater fishes); **12:** 97 (of B.C. whales; correction on **16:** 385); **13:** 489 (of B.C. pinnipeds; correction on **16:** 385); **21:** 335 (myxosporidian, causing "milky" flesh), 549 (*Ligula intestinalis*)
B 62: 13 (of B.C. crabs); **78:** 22 (of *Pontoporeia* by *Cyathocephalus*); **98:** 13 (of beluga); **130:** 17 (of swordfish); **131:** 73 (of Atl. oysters); **132:** 30 (of pilot whales)
PRP 75: 57 (hagfish); **77:** 95 (*Triaenophorus* detection in whitefish); **79:** 30 (barnacles on whales); **105:** 11 (myxosporidian in lemon sole)
CJG 2 (*Sphyrion* on redfish)
NRB 9 (on Nfld. trout); **16:** 39 (on lobster); **17:** 135 (on capelin)
S 243 (re "whirling sickness" in trout); **430** (copepod on sockeye salmon heart); **552** (amphipod whale-lice); **648** (epizootics in Atl. oyster disease); **654, 655, 656, 657, 658, 769, 817, 859** (for distinguishing Pac. salmon stocks); **760** (of European oyster transplanted to Canada); **869** (goldeye new host for trematode); **878** (*Lernaeocera* as cod movement indicator)
SS 49 (copepod, of polychaete); **53, 76** (rhizocephalan, of shrimp); **87** (cestode. of bowfin); **118** (trypanoplasm in sucker blood); **124** (trematodes); **148** (sporozoan, of Georgian Bay fishes); **193** (copepods on Vancouver Is. fishes); **214** (of Strait of Georgia marine animals); **302** (nematode on *Fundulus*); **280** (gregarine, of *Chiridota*); **469** (helminths of Canadian animals); **535, 584** (nematode in coho swim bladder); **813** (microsporidian, of capelin); **815** (of arctic grayling); **1040** (*Delphinapterus* of beluga); **1041** (re fish & man); **1065** (barnacles as)

Parent–progeny relations *see also* Reproduction; Spawning)
SS 176 (of young sockeye salmon); **1341** (of Connecticut R. American shad)

Paricelinus hopliticus (*see* Sculpin, thornback)

Park, Edna W.
J 17: 1 (time & temperature effects on cod fillet cooking)

Parker, Donne Sutherland
J 17: 1 (time & temperature effects on cod fillet cooking)

Parker, Richard Alan
J 12: 447 (removing recruitment effect on population estimates)

Parker, Robert Ray
J 16: 95, 429 (fatigue & mortality in trolled salmon), 721 (concept of growth in fishes); **17:** 199 (chinook salmon critical size & maximum yield); **19:** 315 (tag failure as error source), 561 (Pac. salmon ocean mortality rates); **20:** 1371 (maximum N Pac. sockeye yields; correction on **21:** 1554); **20:** 1441 (weight & size changes in formalin-stored salmon); **21:** 873 (new *Caligus* parasitic copepod), 1019 (pink salmon sea mortality rates), 1101 (pink salmon growth rate)
S 714 (pink salmon populations dynamics); **842** (fish-marking mortality aspects)

Parks, National and Provincial (*see also* Algonquin Park; Garibaldi Park; Jasper Park; Prince Albert Park)
S 278 (pond biology, P.E.I.); **334** (recreational resources, B.C.)

Paroctopus apollyon (*see* Octopus)

Parophrys vetulus (*see* Sole, lemon (Pacific))

Parr (*see* Smolts; *also* biology of different salmon species, particularly Salmon, Atlantic)

Parrotfish (species?)
B 7: 20 (islets of Langerhans tissue re insulin)

Parsons, Timothy Richard
J 18: 1001, 1017 (chemical & pigment composition of marine phytoplankters)
B 125 (seawater analysis manual; revised edition in 1965)
CPO 1959-20, 1962-13 (ocean water primary productivity cruises); **1961-19** (phytoplankton biology in plastic bag); **1962-8** (NE Pac. oceanographic survey)
S 609 (marine standing crops proximate analysis); **631** (primary productivity & fertility in NE Pac.); **682, 816** (plankton production in submerged plastic sphere); **690** (marine diatom infection by *Lagenidium*); **753** (seawater particulate organic carbon production); **758** (oceanic detritus); **814** (marine chlorophyll-*a* distribution & degradation); **858** (seawater suspended organic matter)
SS 1260 (ocean pastures)

Particulate matter in natural waters (*see* Matter, particulate)

Partlo, John Middleton
J 12: 35 (Pac. albacore distribution, age & growth), 61 (albacore gonads histology)
CNG 20, 23 (B.C. albacore catches & biology, 1949 & 1950)

Passamaquoddy Bay, N.B. (The following are references to only some of the Board's own publications of early investigations and collections made at or near this site of the Board's Atlantic Biological Station; references to additional work will be found under various topical headings, e.g. Fundy, Bay of; International Passamaquoddy Fisheries Board; Oceanography, Atlantic (NW coastal waters); St. Andrews, N.B.; Station, Board Biological, St. Andrews, N.B.; Tidal energy; *also* under names of organisms)
C 1901: 19 (clams), 41 (flora); **1906–10:** 33 (Actiniae), 83 (crustaceans), 243 diatoms), 265 (flora), 281 (oysters); **1911–14(I):** 1, **1918–20:** 49 (plankton), 25 (Sporozoa), 43 (Mollusca), 47 (fungi); **1915–16:** 1 (winter plankton); **1918–20:** 63 (diatoms); **1921:** 17 (mussels); **2:** 307 (gribble); **4:** 527 (free-living copepods); **5:** 361 (*Enchelyopus*), 423 (parasitic copepods); **7:** 127 (silica in water), 277 (new polychaete); **8:** 357 (diatoms)
J 2: 89 (mussels), 95, 401, **5:** 365, **10:** 1, **15:** 1329, **17:** 133, 409, 699 (herring feed, distribution, etc.); **5:** 365, **11:** 816 (copepods); **11:** 963 (flounder parasites); **15:** 1355 (clam control experiment); **17:** 409 plankton), 553 (lobsters)
B 111 (herring, re Atlantic Herring Investigation Committee)
PRA 2: 14 (fisheries re water temperatures); **3:** 10 (soft-shell clam resource); **7:** 3 (herring fishery re water temperatures); **8:** 4 (mackerel invade herring fishery), 6 (sardines re salmon angling); **70:** 10 (herring tagging & returns)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

S 3 (copepods); **5** (fauna); **15** (mussels); **32** (diatoms); **111** (protozoan fish parasites); **159** (rare fishes); **211** (international investigations); **346** (sardines)
SS 157 (crustacean plankton); **680** (winter herring); **1267** (fisheries & oceanography)

Pastes (delicatessen)
B 10 (preparation of lobster)
PRP 63: 38, 41 (anchovy; correction on **65**: 66)
CFI 21 (canned lobster)
CHO 13 (canned lobster "tomalley")
S 677 (Atl. fish livers)
SS 314, 592 (lobster)

Pasteurization
S 672 (by electromagnetic irradiation)

Patashnik, Max
J 21: 335 ("milky" flesh in B.C. fishes)

Patents (assigned to Canadian Patents and Development Ltd., National Research Council, Ottawa; some of the following have been patented in other countries also)
Canada Patent No. 484,092 (treatment of fish livers—F. A. Vandenheuvel, June 17, 1952); No. 523,189 (fish-cleaning machine —J. S. M. Harrison, Mar. 27, 1956); No. 552,878 (incorporating antibiotics in block ice—H. L. A. Tarr & D.C. Gillespie, Feb. 4, 1958); No. 563,417 (fish washing machine —W. A. MacCallum, Sept. 16, 1958); No. 608,969 (mid-water fishing trawl for herring & the like—W. W. Johnson & W. E. Barraclough, Nov. 22, 1960); No. 612,992 (aluminum dual-purpose midwater bottom otterboard—W. W. Johnson & W. E. Barraclough, Jan. 24, 1961); Application case No. 3255 (improved mid-water trawl—W. W. Johnson). *See also* **PRP 27**: 15, **35**: 24 (re non-cracking and antiseptic ice glazes)

Pathology (*see* Disease)

Patterson, John Lionel Keith
S 814 (marine chlorophyll-*a* distribution & degradation)

Patterson, Olive Gair
C 1917–18: 175 (haddock smoking)

Patties (*see* Cakes, fish; Delicatessen)

Paul Lake, B.C.
J 4: 69 (rainbow trout)
B 42: 3 (productivity studies)
PRP 11: 10 (Kamloops trout propagation); **13**: 8 (Kamloops trout feed); **19**: 11 (Kamloops trout re trouts of other lakes)
S 214, 215, 230, 250, 251 (rainbow trout)
SS 459 (rainbow trout spawning migration); **847** (trout variations)

Paulik, Gerald John
J 18: 817 (detection of incomplete tag reporting)

Peace River District, B.C.
SS 672 (fishes)

Peamouth (*see* Chub, peamouth)

Pearcy, William Gordon
J 19: 1169 (*Sebastolobus* eggs & early development)

Pearl, artificial (pearl essence) (*see also* Guanine)
PRP 55: 18, **71**: 5 (from herring-scale guanine)

Pearleye (*Neoscopelarchoides dentatus*)
B 68: 118, **68R**: 152 (full description)

Pearlsides, Müller's (*Maurolicus muelleri*)
B 155: 127 (full description)
SS 78 (new to Canada)

Pecten (*see* Scallop; Scallops)

Pecten caurinus (*see* Scallop, Pacific)

Pecten grandis (*see* Scallop, sea)

Pelagic fishing
J 20: 1371 (sockeye salmon; correction on **21**: 1554)

Pelecypoda (*see also* Clam; Gastropoda; Mollusca; Oyster; Scallop; etc.)
C 1917–18: 243 (Canadian)
J 9: 164 (moisture & vitamin B_{12} content)
S 587 (Minas Basin, N.S.)
SS 212 (anaerobic respiration)

Pelican gulper (*see* Gulper, pelican)

Pells, Frank
PRP 80: 52 (growth factor for hatchery trout rations)

Penask Lake, B.C.
B 42: 25 (limnology)

Pendrill Sound, B.C.
J 18: 907 (oceanography)
PRP 102: 20 (natural oyster propagation)

Peneidea (see Shrimps, Pacific)

Penhallow, David Pearce
C 1906–10: 1 (St. Andrews Station 1908 Report)
SS 23 (choosing permanent location for Atlantic Biological Station)

Penicillin (*see* Antibiotics)

Pentland, Ernest Seth
SS 383 (*Gammarus* distribution factors)

Pentose compounds (*see* Kelp; Seaweed products; Sugars)

Peprilus simillimus (*see* Pampano, Pacific)

Peptides (*see also* Peptones)
J 21: 107 (neurosine of fish brain)

Peptones (*see also* Peptides)
J 7: 552 (from fish flesh, for bacterial culture media)
PRP 69: 66 (in enzyme-hydrolyzed flesh); **75:** 43 (from flesh, for culture media)

Perca flavescens, P. glauescens (*see* Perch, yellow)

Perch (in addition to following species, *see also* Cunner; Seaperch)
SS 25 (coloration)

Perch, blue (*see also* Cunner; *also* Seaperch, striped)
SS 457 (occurrence)

Perch, dusky (*see* Seaperch, pile)

Perch, log (*see* Logperch)

Perch, ocean (Atlantic) (*see* Redfish)

Perch, Pacific Ocean (*see* Rockfish, longjaw)

Perch, pike (*see* Walleye, yellow)

Perch, pile (*see* Seaperch, pile)

Perch, sea (*see* Cunner; Perch, white; *also* Seaperch)

Perch, silver (*see* Seaperch, white)

Perch, white (*Roccus americanus*) (*Morone americana;* sea perch)
C 1918–20: 111 (Cape Breton, N.S.)
J 7: 22 (feed vs. supply in Tedford L., N.S.), 94 (muscle & viscera thiaminase); **11:** 701 (parasitization, B.C.); **16:** 825 (off N.B.); **20:** 679 (tissue explant cultures), 1189 (invasion of lower Great Lakes)
B 155: 237 (full description)
PRA 20: 6 (population in N.S. lakes)
CCG 4: 10 (canned brined fillets)
S 137, 213: 417 (Lake Jesse, N.S.); **206** (in 3 N.S. lakes)

Perch, yellow (*Perca flavescens*) (*P. glauescens*)
C 1911–14(II): 46 (Lake Huron)
J 7: 94 (muscle & viscera thiaminase); **8:** 420 (Charlotte Co. lakes, N.B.); **10:** 196 (upper temperature limit); **14:** 654, (B.C. distribution); **15:** 214 (Heming L., Man.), 607 (preferred temperature); **16:** 137 (Lake Winnipeg commercial catches), 147 (associations in Ont. streams), 825 (Miramichi R., N.B.); **20:** 735 (Lake Huron distribution), 1431 (tagging for population estimation)
B 81: 4 (characteristics in Lake Manitoba); **94:** 20 (in arctic & subarctic); **107:** 3 (in Great Slave L.)
PRA 20: 3 (lack of trimethylamine oxide), 6 (N.S. lakes populations)
PRC 2: 3 (Lake Erie experimental trawl incidental catches), 27 (canning of Lake Erie)
CCG 4: 10 (canned; smoked; sausage); **5:** 1 (proximate composition)
CNG 64: 65 (productive capacity)
S 137, 213: 409 (Lake Jesse, N.S., population); **144:** 71 (Vaseaux L., B.C.); **206** (in 3 N.S. lakes); **445** (lethal temperature limits)
SS 117 (James Bay region); **358** (Prairie Provinces industry); **809** (removal by poison); **1091** (Lake Erie activity patterns);

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

1129 (Great Slave L. occurrence); **1208**: 145 (full description, B.C.); **1281** (spoilage bacteria)

Percina caprodes (*see* Logperch)

Percina copelandi (*see* Darter, channel)

Percina maculata (*see* Darter, blackside)

Percina shumardi (*see* Darter, river)

Percopsis omiscomaycus (*see* Trout-perch)

Peridiniidae
SS 346 (B.C. alpine)

Periodicity (*see* Abundance; Moon)

Periwinkles (*Littorina* species)
C 3: 135 (habits; uses as food); **4**: 415 (development; growth; behaviour)
J 7: 96 (thiaminase in)
PRA 63: 3 (as green crab feed); **71**: 21 (resource & future prospects)
SS 304 (negative geotropism); **305** (environment re development & growth)

Perlids (*see* Stoneflies)

Permeability of gravel spawning beds
J 12: 706 (measurement & theory); **15**: 1027 (measurement), 1103 (re egg density)

Peroxide value (*see also* Antioxidants; Rancidity)
B 89: 362 (significance in fish oils & tissues)
PRP 88: 67, **108**: 21 (of frozen salmon)

Peroxides (*see also* Antioxidants; Rancidity)
B 59, 89 (in fish oils & meals; *see* their indexes)

Perry, H. Margaret
S 41 (marine fish bacteriology)

Peterson, Ruth Isobel
PRP 87: 27 (lemon & rock soles length & age)

Petersen estimates (*see also* Abundance)
B 119 (re populations estimates, composition, etc.; *see* its index)

Petrale (sole) (*see* Brill)

Petrie, Donald John
CVG 31 (moisture loss from cartons of frozen fish)

Petromyzon marinus (*see* Lamprey, sea)

Pfeiffer, Wolfgang
J 21: 1083 (lamprey skin cells)

Pfrille neogaeus (*see* Dace, finescale)

***p*H chemical and biochemical effects** (The following is not an exhaustive list of references to such effects concerning which innumerable observations have been recorded; *see also* other cognate subjects, e.g. Culture, invertebrates; Drip; Preservatives)
J 4: 219, 355, **5**: 121, **6**: 45, 53, 403, **14**: 775, **16**: 13, 21 (re actions of fish-spoilage bacteria); **5**: 203 (re cod muscle juice buffering), 265, **6**: 233 (re bacteria inhibition by nitrite & nitrate); **5**: 276, 287 (re salt cod "dun" moulds), 411 (re fish muscle swelling & drip); **6**: 435 (re herring egg development); **7**: 155 (re germicidal ices), 561 (re enzymic reduction of trimethylamine oxide); **10**: 590 (re pyloric caeca proteolytic enzyme action); **12**: 333 (re haddock spoilage); **13**: 21 (re cod & haddock quality assessment), 48 (of Atl. oyster meats), 292 (of fillets from gilled vs. ungilled stored fish); **15**: 573 (of blood of exercised fish); **16**: 391 (changes in trout after exercise); **17**: 481 (re spoilage test for shrimp), 811 (of flesh from stored gutted dogfish)
PRA 24: 3, **26**: 3, **55**: 17 (re fresh fillets keeping quality); **56**: 17 (of lightly salted fish in pickle)
PRP 33: 16, **47**: 5 (re muscle juice & drip); **44**: 16 (re nitrite preservative efficiency); **52**: 19 (of herring tissue re vacuum in canned product)
S 63 (of fish muscle); **70** (of fish bile); **71** (re eel-pout digestive system); **78** (re digestion in ascidians); **119** (re urea physiological significance)
SS 294 (re *Daphnia magna*)

***p*H of natural waters** (*see also* Limnology; Oceanography)
B 125: 29, 176 (determination in seawater; revised edition in 1965)
SS 275 (re granite & limestone rock formations in pools)

Phanerodon furcatus (*see* Seaperch, white)

Phillips, John Guest
S 726 (Atl. hagfish blood corticosteroids)

Phoca fasciata (*see* Seal, ribbon)

Phoca groenlandica (*see* Seal, harp)

Phoca hispada (*see* Seal, ringed)

Phoca vitulina concolor (*see* Seal, harbour (Atlantic))

Phoca vitulina mellonae (*see* Seal, Ungava freshwater)

Phoca vitulina richardi (*see* Seal, harbour (Pacific))

Phocanema decipiens (*Porrocaecum decipiens, Terranova decipiens*; Atlantic codworm) (*see also* Cod, Atlantic (biology); Cod, Atlantic (products))
J 10: 539 (harbour seal as host); **11**: 894 (experimental infection of cod from smelt); **13**: 343 (larvae in cod); **14**: 831 (in various fishes), 975 (in Atl. cod fillets); **15**: 1 (in porpoises), 495 (in seals, re cod), 537 (detection in fillets by candling); **16**: 213 (incidence in small cod); **17**: 501 (harmlessness in cod fillets), 763 (life history in Bras d'Or Lakes, N.S.); **18**: 137 (detection & removal from fillets); **20**: 1 (pyrimidine-amino acid complex; composition), 743 (in-vitro maturation)
B 93: 37 (in B.C. harbour seals)
PRA 48: 10, **72**: 3 (in free & captive cod)
CFI 5 (candling for, in cod fillets)
S 401 (early development); **599** (morphology; life history; hosts)

Phocoena phocoena (*see* Porpoise, common)

Phocoena vomerina (*see* Porpoise, harbour)

Phocoenoides dalli (*see* Porpoise, Dall)

Pholis
J 21: 937 (key to western N American)

Pholis clemensi
J 21: 933 (description as new species, southern B.C.)

Pholis fasciata (*see* Gunnel, banded)

Pholis gunnellus (*see* Gunnel, rock)

Pholis latea (*see* Gunnel, crested)

Pholis ornata (*see* Gunnel, saddleback)

Phoronidae
SS 51 (2 new species)

Phosphates (*see also* Crystals; Nucleotides; Phosphorus compounds)
J 5: 244 (as flesh products preservative); **21**: 101, 539, 719, 1397 (in treatment of frozen Atl. cod), 159 (effect on marine plankton growth)
PRP 35: 24 (for crack-resisting ice glaze); **37**: 7 (for brining of fish to be smoked); **44**: 16 (re nitrite preservative efficiency)
B 125: 41 (determination in seawater; revised edition in 1965)
S 815 (determination of traces in waters)

Phospholipids (*see also* Nucleotides)
J 15: 555 (fatty acids of, in salt cod); **17**: 371 (lingcod muscle), 565 (maturing sockeye tissues); **19**: 733 (changes in frozen lingcod)
S 517 (review re biochemical significance); **794** (alkaline hydrolysis)

Phosphorescence (*see* Luminescence)

Phosphorus compounds (crystalline) in fishery products (*see* Crystals)

Phosphorus compounds in fresh and marine waters (*see also* Limnology; Oceanography)
J 16: 7 (in Atl. coastal seawater), 887 (in farm drainage; correction on **17**: 983) **17**: 337 (cycle in NE Pac. Ocean)
B 125: 37 (determination in seawater; revised edition in 1965)
PRA 72: 33 (in offshore W Atl. waters)
S 815 (determination of traces in waters)

Phosphorus compounds in tissues (*see also* Acids, nucleic; Biosynthesis traced by isotopes; Nucleotides; Phosphates; Phospholipids)
C 3: 437, 457 (re rigor mortis)
J 6: 152 (lobster); **7**: 608 (skeletal muscle); **10**: 253 (phytoplankton), 283 (plankton); **12**: 642 (fish & mammalian livers); **17**: 371, 603 (lingcod muscle), 449 (muscle

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ., **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

of iced chinook salmon), 565 (maturing sockeye salmon tissues); **18:** 321 (of fish flesh re rigor mortis), 349 (nucleosides, etc. from deoxyribonucleic acid), 1001 (amounts, & ratio of P to other compounds in marine phytoplankters); **19:** 519 (origin & distribution)
B 122: 20, **125:** 123 (phytoplankton)
PRP 41: 17 (re edible bone in canned fish); **53:** 9, **57:** 11 (re nutritive value of fishery products); **114:** 19 (re storage of frozen albacore tuna)
S 400, 526, 534, 568, 570, 606, 607, 640 (lingcod tissues; enzymes); **633** (Atl. cod muscle; enzymes); **682** (phytoplankton); **733, 736** (steelhead trout phosphogluconic acid & sugar metabolism); **820** (rainbow trout phosphoglucomutases separation)

Photography
J 12: 832 (underwater, of scallops); **18:** 1159 (underwater, of fish); **19:** 335, 399 (of otoliths)
CAG 5 (aerial, for seal population surveys)
S 795 (of underwater wildlife)
SS 322 (field photomicrographic apparatus); **902, 929** (aerial, of seals)

Photometry (*see* Illumination; Light, penetration of; Photosynthesis; Radiometer; Transparency)

Photoperiodism (*see also* Light, reactions to)
J 20: 859 (effect on brook trout reproductive cycle); 1245 (effect on juvenile Atl. salmon reactions to light stimuli)

Photosynthesis (*see also* Algae; Irradiation; Light, penetration of; Limnology; Oceanography; Phytoplankton; Plankton)
C 6: 41 (by marine algae)
J 15: 458 (re solar radiation to marine phytoplankton); **17:** 871 (in *Chlamydomonas* algae); **21:** 159 (by marine phytoplankton)
B 122: 61 (by phytoplankton); **125:** 147 (rate determination)
PRP 113: 13 (by plankton)
S 631 (re marine primary productivity & fertility); **644, 682, 816** (in submerged plastic bag); **673** (light attenuators for); **682** (radiant energy relations); **753, 754, 755** (of marine plankton, traced by radioactive isotopes); **778** (thermopile radiometer for radiation); **828** (productivity diurnal variation, NE Pac.)

Phototaxis (*see* Light, reactions to)

Phoxinus neogaea (*see* Dace, finescale)

Phyllopoda (*see also* Entomostraca)
C 1917–18: 248 (Canadian)

Phyllospadix scouleri, P. torreyi (*see* Surf-grass)

Phylogeny (*see also* Taxonomy)
J 18: 679 (grayling)
S 625 (Pinnipedia possibly biphyletic)
SS 277 (Pac. dogfish intestinal valve)

Physeter catodon (*see* Whale, sperm)

Physical condition of waters (*see* Currents; Limnology; Oceanography; Physiography)

Physics, general
B 11 (fundamental principles)

Physiography
C 1906–10: 4, **1915–16:** 109 (St. Andrews, N.B., vicinity); **1906–10:** 295 (Departure Bay, B.C.)
J 8: 1 (Great Slave L.); **13:** 515 (B.C. lakes); **16:** 923 (depths of lakes); **18:** 273 (Great Lakes), 463 (Boar's Back L., N.S.); **19:** 1106 Victoria Is., Canadian Arctic); **21:** 1069 (Nitinat L., B.C.)
B 42: 3 (Paul L., B.C.); **56:** (Okanagan L., B.C.); **57:** 4 (Margaree R., N.S.); **72** (N.W.T.); **83:** 5 (Alberni Inlet, B.C.); **84:** 3 (Cowichan R., B.C.); **86** (Moricetown Falls, B.C.); **94:** 2 (Canadian Arctic & Subarctic)
PRA 47: 3 (rock formations of lakes re trout)
PRC 1: 41 (Great Slave L.)
PRP 12: 7, **76:** 66, **96:** 3, **97:** 12, **98:** 13, **99:** 9 (B.C. inlets & fiords); **66:** 12, **67:** 23, **68:** 55, **69:** 70, **70:** 10, **72:** 28, **74:** 6, 9, **78:** 6 (lakes of Skeena R. drainage system, B.C.); **95:** 59 (Strait of Georgia bottom character)
S 72 (B.C. clam districts); **123** (B.C. fiords); **163** (Jones L., B.C.); **178** (Scotian Shelf); **270** (Ont. salmon streams); **318** (P.E.I.)

SS 117 (James Bay region); **829** (arctic re subarctic zones delimitation); **912** (re salmon movements); **1088, 1127** (B.C. inlets); **1313** (Powell L., B.C.)

Physiology, circulatory system (*see also* Blood; Heart)

C 1902–05: 24 (effects of explosion); **5**: 83 (effect of light on *Calanus*); **7**: 17, 31, 439 (hormones & extracts effects on skate); **8**: 207 (skate arteries & conus)

S 47, 53 (ratfish brain vascular supply); **119** (urea re dogfish heart)

SS 306 (schizopod cardiac rhthym); **329** (dogfish vascular system); **478** (skate)

Physiology, digestion (*see* also Bile; Caeca, pyloric; Digestibility; Digestive tract; Ruminant livestock feed)

C 4: 107 (of Cladocera); **7**: 1, 11 (of skate), 45 (of mummichog)

J 1: 145, **2**: 401 (of Atl. herring); **1**: 251, 497 (of elasmobranchs); **5**: 217 (tryptic enzymes); **12**: 781 (feed conversion by murres); **16**: 421, **17**: 113, 347, 565 (maturing sockeye salmon; corrections on **17**: 943, 944); **19**: 1005 (largemouth bass, re water temperature)

PRA 2: 3, **8**: 10 (stimulation by ingestion of fishery products); **11**: 4 (clearing rate in sardine)

S 57 (of mummichog); **70** (bile *p*H & enzymes of various Atl. fishes); **71** (of eelpout); **78** (of ascidians); **99** (of skates); **216** (of kingfishers); **377, 457** (of cellulose in ruminants); **474** (Atl. oyster anatomy); **561** (Atl. oyster gastric shield composition); **588** (radiography, of sockeye & coho salmon)

SS 277 (histology & phylogeny, of Pac. dogfish); **471** (gastric stimulation by fishery products)

Physiology, general (*see also* Metabolism)

J 20: 1355 (body fluid regulation in smolting Atl. salmon); **21**: 1535 (salmonids adaption to seawater)

B 85: 19 (Pinnipedia)

S 39 (*Chiridotea*); **58** (dogfish reactions to salinity); **68** (asphyxial hyperglycemia in lingcod); **95** (Ascidiacea); **169** (hermit crabs); **207** (overexertion causing death); **388** (nutrition of marine bacteria)

SS 330 (Pac. dogfish); **992** (as approach to fisheries biology)

Physiology, human

J 5: 211 (ingestion of trimethylamine oxide); **6**: 63 (ingestion of sodium nitrite)

B 75: 22 (ingestion of toxic shellfish)

PRA 8: 10 (digestive stimulation by lobster meat)

Physiology, integument and skeleton (*see* Age determination; Scales; Shell; Teeth; Vertebrae)

Physiology, nerve and muscle

C 1902–05: 29 (effect of explosion); **1906–10**: 277 (lobster intestine); **4**: 495 (lethal temperature effects); **6**: 335 (skate central nervous system); **7**: 31 (hormones effect on skate heart), 447, 477, **8**: 145 (elasmobranch stomach & intestine)

J 1: 239 (skate stomach innervation), 251 (elasmobranch gastric secretion), 261 (skate clasper glands)

S 8 (narcotics effects on retinal reflexes); **33** (effects of extreme temperatures); **47, 53** (ratfish vascular system); **51** (skate spinal reflexes); **66** (dogfish central nervous system); **100** (*Pecten* adductor muscle); **157** (*Salmo* scale development)

SS 162 (lobster nerve cells cytology)

Physiology, reproduction (*see also* Reproduction)

C 7: 283 (Atl. oyster sex reversal)

J 1: 261 (skate clasper functions); **6**: 140 (littleneck clam gonad changes), 252 (mechanical shock effects on teleostean ova); **8**: 125 (storage effects on salmonid eggs & sperm); **21**: 773 (fur seal)

Physiology, respiratory system (*see also* Gills; Respiration)

C 1901: 10 (polluted water effects); **1902–05**: 24 (explosion effects); **2**: 110 (temperature & age effects); **5**: 193 (parasitic Saprolegniaceae); **6**: 315 (skates); **7**: 71 (freshwater effects on flounders)

J 4: 267 (trimethylamine oxide effect on *Achromobacter*); **5**: 485 (temperature

effects on salmon & trout); **6**: 435 (CO_2 tension effect on herring eggs); **12**: 917 (activity effect on freshwater fishes blood); **16**: 175 (re O_2 capacity & concentration in fishes blood); **19**: 1025 (movement energy effect on fishes); **20**: 273 (Atl. cod)
S 7 (*Mya* & other molluscs); **16** (crystalline style role in clam); **663, 698** (white sucker; brown bullhead; carp)
SS 192 (soft-shell clam anaerobic respiration); **212** (pelecypod anaerobic respiration)

Phytichthys chirus (*see* Prickleback, ribbon)

Phytoplankton, arctic marine, in general (*see also* Diatoms; Feed studies; Plankton; *also* names of classifications; names of localities and bodies of water)
J 18: 563 (off Igloolik, N.W.T.)
S 802 ("successions")
SS 1359 (Point Barrow coast, Alaska)

Phytoplankton, Atlantic marine, in general (*see also* Diatoms; Feed studies; Oceanography; Plankton; *also* names of classifications; names of localities and bodies of water)
C 1902–05: 1 (eastern N.S.); **1915–16**: 1, 93 (Fundy & Passamaquoddy Bays)
J 1: 279 (Bay of Fundy & Gulf of Maine); **21**: 139 (cell division rates), 159 (photosynthesis)
S 858 (re suspended organic matter)
SS 186 (Gulf of St. Lawrence region)

Phytoplankton, freshwater, in general (*see also* Diatoms; Feed studies; Limnology; Photosynthesis; Plankton; *also* names of classifications; names of localities and bodies of water)
J 10: 253 (growth factors); **13**: 53 (Great Slave L.); **15**: 211 (Heming L., Man.), 463 (of a N.S. brown-water lake)

Phytoplankton, marine, in general (*see also* Diatoms; Feed studies; Oceanography; Photosynthesis; Plankton; Productivity; *also* names of classifications)
J 15: 453 (re radiation)
B 122 (measuring production of); **125**: 107 (chemical analyses methods; revised edition in 1965)
SS 1375 (re primary production)

Phytoplankton, Pacific marine, in general (*see also* Diatoms; Feed studies; Oceanography; Photosynthesis; Plankton; Productivity; *also* names of classifications; names of bodies of water)
C 1: 81 (re water density)
J 13: 7, **21**: 505 (basic productivity in inlets); **14**: 296, 527 (Strait of Georgia); **18**: 1001, 1007 (chemical & pigment composition); **21**: 1075 (in tidal lakes)
PRP 41: 14 (producing lethal O_2 supersaturation); **113**: 13 (role in primary feed production)
CPO 1960-20, 1961-21 (primary productivity in submerged plastic bag)
S 56, 112 (Strait of Georgia); **123** (in B.C. fiords); **609** (proximate analysis of standing crop); **631** (re marine productivity & fertility); **644, 682, 816** (in-situ photosynthesis in plastic bag); **752, 753, 754** (photosynthesis tracing re primary productivity); **858** (re suspended organic matter)
SS 378, 379 (Strait of Georgia); **1260** (as "ocean pastures")

Pickard, George Lawson
J 10: 125 (B.C. coast surface waters oceanography); **13**: 581 (Strait of Georgia currents); **14**: 487 (physical oceanography, Bute Inlet, B.C.), 605 (B.C. inlets heat budget & freshwater transport); **16**: 635 (current measurement in Knight Inlet, B.C.); **18**: 907 (oceanography of B.C. mainland inlets); **20**: 1109 (oceanography of Vancouver Is. inlets)
PRP 96: 3, **97**: 12, **98**: 13, **99**: 9 (oceanography of B.C. mainland inlets)
SS 1088, 1127 (B.C. inlets oceanography & physiography); **1313** (ancient seawater in Powell L., B.C.)

Pickerel (*see* Walleye)

Pickerel, blue (*see* Pike, blue)

Pickerel, chain (*Esox niger*)
B 116 (as merganser feed)

Pickerel, grass (*Esox americanus vermiculatus*)
J 19: 979 (predator–prey interaction with mudminnow)

Pickerel, redfin (*Esox americanus americanus*)

J 19: 979 (non-predation on associated mudminnow)

Pickerel, yellow (*see* Walleye)

Pickle and pickling (see also Cod, Atlantic (salted); Marinating; Salt fish)
B 6 (for lobster canning); **19** (mackerel); **52** (Atl. herring)
CFI 9 (for cod liver canning)
CGR 1 (mackerel); **2** (Atl. herring)
CHO 20 (for lobster canning)
CVI 7 (for sugar-cured salmon delicatessen)

Piddock (*see* Clam, rock-borer)

Pig (*see* Pork)

Pig, puffing (*see* Porpoise, common)

Pigment (*see also* Carotenoids; Chlorophyll; Cod, Atlantic (salted); Decolorization; Discoloration; Rustiness)
C 1901: 11 (warm water effect on bass skin); **1915–16**: 86 (serially striped haddock); **6**: 188 (whitefish larvae melanophore distribution), 230 (cisco larvae melanophore distribution)
J 3: 469 (Pac. salmon flesh astacin); **4**: 55 (pilchard oil), 209 (kokanee salmon skin); **7**: 184 (Great Bear L. trout flesh); **9**: 169 (anadromous & freshwater brook trout skin); **10**: 320 (humpback whale skin colour patterns); **12**: 178 (salmon smolt skin, re pineal control); **14**: 617 (*Pseudomonas*), 637 (change in frozen lobster meat); **15**: 695 (absorption spectrum of red-fleshed redfish & atypical cod & haddock fillets); **16**: 449 (atypical cod & haddock flesh); **18**: 483 (white & dark halibut muscle), 495 (white & dark mackerel muscle), 1001, 1017 (nature & amounts in marine phytoplankters); **20**: 1153 (red & white porbeagle flesh)
B 59, 89 (of marine animal oils; *see* their indexes); **122**: 27, **125**: 107 (phytoplankton)
PRA 10: 4 (changes in Atl. cod skin); **72**: 19 (in salt cod pickle)
PRP 11: 5 (herring & pilchard oils); **29**: 12 (re inspection of canned salmon); **35**: 7 (re herring oil vitamin potency); **40**: 14 (nitrite effect on canning salmon); **100**: 15 (fading of salmon on canning); **108**: 21 (changes in frozen salmon)
S 499 (stabilizers for flesh); **504** (predicting colour of salmon after canning); **682, 858** (phytoplankton)
SS 135 (Pac. salmons & trout flesh); **470** (B.C. goby); **703** (hagfish skin); **816** (rapid change of sculpin skin colour); **1279** (woad indigo content)

Pike, blue (*Stizostedion vitreum glaucum*) (blue pickerel)
CNG 64: 64 (productive capacity)
SS 358 (Prairie Provinces industry)

Pike, Gordon Chesley
J 8: 275 (lamprey marks on whales); **10**: 320 (B.C. humpback whales colour pattern); **12**: 97 (Pac. whales helminth parasites; correction on **16**: 385); **15**: 5 (B.C. sea lion abundance); **17**: 123 (striped dolphin in B.C.; correction on **17**: 944); **19**: 363 (great white shark), 815 (gray whale migration & feeding)
PRP 79: 30 (B.C. whaling investigation); **81**: 84 (B.C. whales indentification); **83**: 27 (whales stomach contents); **97**: 3 (Pac. sea lamprey); **112**: 18 (northern sea lion feed)
CNG 12 (albacore sizes); **32** (guide to Pac. whales, porpoises & dolphins); **68** (Canadian W coast whales & dolphins, & recording data about)
S 348 (B.C. records of beaked whale); **352** (B.C. finback whales growth); **393** (B.C. whaling); **646** (northern B.C. sea lions)
SS 1002 (Norwegian minke whaling); **1043** (killer whale); **1044, 1045** (B.C. whale stocks); **1077** (fin whales total mortality rates); **1261** (Canadian share of fur seals)

Pike, northern (*Esox lucius*) (jackfish)
C 1911–14(II): 34 (Lake Huron); **1**: 436 (Lake Athabaska)
J 8: 207 (Great Slave L.); **9**: 107 (Ungava Bay); **11**: 700 (parasites of B.C.); **13**: 722, **14**: 656 (B.C. distribution); **15**: 214 (Heming L., Man.); **17**: 647 (mutant); **19**: 989 (furunculosis in); **21**: 651

(evidence of hardiness), 1043 (heat resistance of maskinonge hybrid), 1457 (with accessory fin)
B 72: 41 (Great Bear L.), 81 (Lake Athabaska); **94** (arctic & subarctic); **107** (in Great Slave L. fishery)
PRC 1: 31, **2**: 48, 51 (exploitation in *Triaenophorus* control)
PRP 75: 35 (smoking of)
CCG 3: 8 (record size, Great Slave L.)
CNG 64: 66 (productive capacity)
CVI 12, 13 (constituents; proximate analysis; vitamin A)
S 144: 69 (B.C. northern distribution)
SS 111, 117, 119 (Hudson Bay & James Bay region); **358** (Prairie Provinces industry); **438** (Sask.); **1208**: 136 (full description, B.C.); **1298** (silver pike a mutant of)

Pike, "silver" (*Esox lucius*)
J 17: 647 (a mutant of northern pike)
SS 1298 (a mutant of northern pike)

Pike-perch, yellow (*see* Walleye)

Pilchard (biology) (*Sardinops sagax*) (*S. caerulea;* Pacific or California sardine)
C 7: 245 (feed off B.C.)
J 6: 164 (tagging); **13**: 507 (effects of aquarium diet on young); **15**: 790 (investigations review); **19**: 867 (embryology); **21**: 691 (serologically differentiated subpopulations)
B 36 (B.C. fishery); **38** (B.C. catch statistics); **68**: 77, **68R**: 101 (full description); **119** (fishing rate estimate)
PRP 11: 24 (feed); **23**: 24 (large specimen); **24**: 15 (length distribution & vertebral counts); **31**: 7, **35**: 9, **38**: 16, 18, **64**: 51 (tagging); **45**: 6, **47**: 11 (young in B.C. inlets); **48**: 3 (young mortality); **52**: 2 (as albacore feed); **57**: 12 (size changes in runs); **67**: 31 (distant tag return)
CNG 11 (B.C. supplies, to 1948); **22** (B.C. situation, 1950); **64**: 49 (future catches unlikely)
S 120, 183 (vertebral counts; year-class variations); **128** (statistical investigational methods); **176, 196, 220, 239, 246, 253, 261** (tagging methods & recoveries); **194** (life history); **264** (unusual abundance of young in B.C.); **453, 851**: 55 (B.C. fishery, 1917–1947); **819** (oil fatty acids distribution re metabolism)
SS 354 (& associates); **430** (feed study); **487** (catch statistics); **488** (life history; morphology); **546** (general); **646, 775, 798** (tagging recovery); **667** (sex ratio)

Pilchard (products)
C 6: 355 (oil vitamin A), 365, **8**: 321 (oil paints); **7**: 431 (oil decolorization), 521 (oil hydrogenation)
J 1: 487 (oil processing for paint); **2**: 13 (oil paint films structure), 457, 469 (composition of canned); **3**: 177 (reduction plant effluent nitrogenous constituents); **4**: 55 (oil pigments), 59, **6**: 109, **21**: 841 (oil fatty acids); **5**: 428 (body, liver & intestine oils vitamins A & D)
B 35 (reduction plant effluent losses); **36**: 19 (various products); **37**: 125, **59, 89** (oil technology; *see* their indexes); **39** (reduction plant pollution re fisheries); **46** (processing for high-grade feeding oil)
PRP 4: 6, **10**: 17, **24**: 3, **25**: 13, **31**: 14 (oil for paints); **9**: 15, **10**: 14, **19**: 7, **20**: 6, **21**: 8, **25**: 13, **28**: 6 (hydrogenation & uses of oil); **11**: 5 (decolorizing oil); **16**: 14, **20**: 14 (reduction plant effluent losses, analyses & sea pollution); **19**: 5, **23**: 11, **39**: 3 (seasonal changes in oil vitamins A & D); **19**: 20, **53**: 9 (analyses & nutritive value of canned); **24**: 23 (cleaning drums for oil); **25**: 13, **44**: 4, **45**: 21 (oil utilizations); **26**: 16 (economy in oil refining industry); **30**: 19 (oil composition); **31**: 14 (phenolated oil); **32**: 17 (bulk oil measurement); **32**: 17, **63**: 43 (oil coefficient of expansion); **33**: 8, **39**: 3 (body & liver oils vitamins A & D); **33**: 8 (visceral organs vitamin A); **38**: 7 (oil vitamin D); **47**: 12 (free & combined vitamin D in oil); **90**: 14 (vitamin B_{12} in California & South Africa meals)
CVI 1 (varnish base from oil); **4** (oil vitamins A & D); **17** (amino acids & vitamins of canned)
S 87 (oil properties); **97** (oil vitamin D)
SS 316 (B.C. harvest); **341, 342** (meals); **530** (liver oil vitamins A & D); **604** (oil composition)

Piling
PRP 51: 20 (shipworm attack control by dynamite)

Pilot (*see* Cod, Greenland)

Pilot, black (*see* Barrelfish, American)

Pilot, shark (*see* Pilotfish; Rudderfish, banded)

Pilot plants for processing fishery products (*see* types of processing, e.g. Canning; Fillets and filleting; Reduction)

Pilotfish (*Naucrates ductor*) (rudderfish; shark pilot)
J 16: 509 (records off Halifax)
B 155: 250 (full description)

Pimephales notatus (*see* Minnow, bluntnose)

Pimephales promelas (*see* Minnow, fathead)

Pimlott, Douglas Humphries
S 572 (age of moose from teeth)

Pinckard, William Ferdinand
PRP 109: 6 (pomfret off B.C.)

Pine Island Lightstation, B.C. (*see also* Lighthouse and lightship stations, B.C. coast)
PRP 90: 16, **94**: 8, **98**: 6 (collection of oceanographic data)
S 473 (classification of daily temperatures & salinities)

Pineal organ
J 12: 178 (injury effects, sockeye salmon smolts)

Pinfish (*see* Stickleback, fourspine; Stickleback, threespine)

Pinhey, Kathleen F.
C 3: 179, 331 (Strait of Belle Isle Entomostraca & other plankton)

Pinhorn, Allenby Thomas
J 20: 1245 (Atl. salmon light stimuli reaction; corrections on **21**: 1553)

Pink salmon (*see* Salmon, pink)

Pinnipedia (*see also* Sea lion; Seal; Walrus)
J 13: 489 (parasites of Pac. coast; correction on **16**: 385)
B 85, 137 (E & arctic Canadian waters)
S 625 (possibly biphyletic)

Pintail (*see* Ducks; *also* Birds; Predators, bird)

Pipefish (Pacific) (*Syngnathus griseolineatus*) (bay pipefish)
C 1: 290 (spawning)
B 68: 127, **68R**: 356 (full description)
S 290 (Queen Charlotte Is.)

Pipefish, bay (*see* Pipefish (Pacific))

Pipefish, northern (*Syngnathus fuscus*) (*Siphostoma fuscus*)
C 1918–20: 111 (Gulf of St. Lawrence)
J 16: 823 (Miramichi Bay, N.B.); **17**: 732 (first SW N.S. record)
B 155: 177 (full description)
S 234 (P.E.I.); **587** (Minas Basin, N.S.)

Pisaster (*see* Starfishes)

Piscicides (*see* Poisons)

Pitt, Thomas Kenton
J 15: 275 (capelin distribution, spawning, races), 295 (capelin age & growth); **20**: 1159 (American plaice vertebral numbers); **21**: 597 (American plaice fecundity; correction on **21**: 1554)
PRA 59: 3 (bruised plaice)
S 729 (redfish vertebral numbers); **876** (cod tags & tagging comparative returns)
SS 1128 (carp water temperature selection)

Pituitary gland
J 11: 57 (growth hormone, Pac. salmon); **21**: 635 (removal technique from salmon)
SS 690 (Atl. salmon)

Pivnick, Hilliard
J 7: 378 (bacterial counts re cod fillet quality)

Pixell, Helen L. M. (*see also* Goodrich, Helen Pixell)
SS 51 (2 new Phoronidea species, Vancouver Is.); **52** (Serpulidae polychaetes from Pac. coast)

Placopecten (*see* Scallop; Scallops)

Placopecten grandis, P. magellanicus (*see* Scallop, sea)

Plaice, American (***Hippoglossoides platessoides***) (**blackback; Canadian plaice; long rough dab; plaice**) (*see also* International Commission for the Northwest Atlantic Fisheries)

C 1902–05: 90, **1918–20**: 113 (Cape Breton, N.S.); **1902–05**: 91 (trematode parasites)

J 7: 96 (thiaminase in); **10**: 539, **11**: 954, **14**: 851, **17**: 762 (nematode & trematode parasites); **13**: 129 (fillets analyses, quality & storage), 147 ("jellied" flesh condition & analysis); **16**: 43 (frozen fillets lipid hydrolysis), 821 (Miramichi Bay, N.B.); **20**: 497 (discards at sea), 1159 (vertebral number); **21**: 597 (fecundity; correction on 1554)

B 1 (description); **108** (Nfld. Danish-seine exploration for); **109, 141** (catch & value in Nfld. longlining experiment); **155**: 389 (full description)

PRA 25: 12 (nomenclature; distribution in local catches); **59**: 3 (cause of bruised flesh before filleting); **66**: 9 (frozen storage before filleting)

CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)

CNG 64: 16 (productive capacity)

CSG 2 (offshore landings, 1938–40); **12**: (description; fisheries)

NRB 4: 8 (description)

NSB 14: 12 (life history)

S 235 (off Sable Is.); **413** (NW Atl. stocks); **566** (cold storage life); **850, 874** (codend mesh selectivity)

SS 169 (age from scales); **1211, 1238, 1289, 1300, 1325, 1335, 1336, 1361, 1368** (length frequencies)

Plaice, Canadian (*see* Plaice, American)

Plaice, European (***Pleuronectes platessa***) (***Platessa platessa***)

J 15: 650 (distribution & landings, re temperature)

B 119 (Baranov & Beverton–Holt production computations)

Plankton (general)

SS 318 (suggested methods standardization); **373** (re marine biology & oceanography); **545** (handling shipboard collections)

Plankton, arctic marine, in general (*see also* Feed studies; Phytoplankton; Zooplankton; *also* names of classifications; names of localities and bodies of water)

SS 1351 (Prince Gustaf Adolph Sea)

Plankton, Atlantic marine, in general (*see also* Feed studies; Phytoplankton; Zooplankton; *also* names of classifications; names of localities and bodies of water)

C 1902–05: 1 (E N.S.); **1911–14(I)**; 1, **1915–16**: 1 (St. Andrews Bay, N.B.); **1917–18**: 229 (check list; distribution)

J 10: 211 (natural populations growth & competition theory); **18**: 51 (Hudson Bay Expedition)

B 138 (re oceanography)

PRA 67: 31 (Gulf of St. Lawrence & Strait of Belle Isle)

SS 83 (St. Croix R. estuary); **157** (crustacean forms in); **185** (Atl. quantitative distribution)

Plankton, freshwater, in general (*see also* Feed studies; Limnology; Phytoplankton; Zooplankton; *also* names of classifications; names of localities and bodies of water)

C 2: 359 (Fraser R. system lakes); **4**: 343 (Jasper Park lakes); **5**: 399 (Man. lakes)

J 1: 67 (in heavily fertilized water); **4**: 19 (net sampling methods), 33 (seasonal & annual variations, Cultus L., B.C.); **8**: 402 (Charlotte Co. lakes, N.B.); **10**: 224 (definitions; standing crops), 238 (sampling methods), 283 (decomposition results); **11**: 638 (Port John L., B.C.); **13**: 53 (collecting device), 107 (large Canadian lakes), 515 (productivity indices in B.C. lakes); **14**: 64 (toxic)

B 42 (Kamloops region lakes, B.C.); **56**: 14, 58 (Okanagan L., B.C.); **72**: 36, 54, 74 (Yukon & N.W.T.)

PRP 21: 14 (re Cultus L., B.C. sockeye salmon); **66**: 12, **68**: 55, **69**: 70, **70**: 10, **74**: 6, **78**: 6 (in Skeena R. drainage lakes)

S 158 (statistical treatment of sampling); **228** (in brackfish lagoon); **297** (in fertilized lake)

SS 300 (Lake Brereton, Man.); **439** (utility of nets); **472** (Lake Winnipeg drainage system)

Plankton, Pacific marine, in general (*see also* Feed studies; Phytoplankton; Zooplankton; *also* names of classifications; names of localities and bodies of water)
C 7: 249 (list of, in pilchard feed)
J 1: 481 (list of, in herring feed); **14:** 521 (collecting net & list of catches)
PRP 11: 24 (pilchard feed); **22:** 3 (re oceanography); **46:** 14 (causing salmon mortality); **103:** 19 (in B.C. mainland inlets)
CNG 17: 15 (re albacore scouting)
CPO 1959-20, 1960-5, 1961-21, -26, 1962-13 (NE Pac. primary productivity)
SS 149 (B.C. coast); **340** (Strait of Georgia, re oceanography); **468** (W coast Vancouver Is.)

Plantings of fish (see Hatcheries; Transplanting)

Plants (*see* Flora (marine); Flora (terrestrial))

Plants, processing (and lay-out of) (*see* types of processing, e.g. Canning; Fillets and filleting; Reduction; Refrigeration; Shucking; *also* Sanitation of plants)

Plasma (*see* Blood)

Plastic (*see* Horn, artificial; Packaging)

Platessa platessa (*see* Plaice, European)

Platford, Robert Frederick
J 21: 1475 (dissolved calcium carbonate in Labrador Sea)
S 827 (ferric hydroxide activity product turbidimetry)

Platichthys stellatus (*see* Flounder, starry)

Platygobio (*see* *Hybopsis* species)

Plaunt, Isabel Nina
J 20: 1231 (effective fish-washing operations)

Plecoglossus altivelis (a salmonid fish)
J 18: 679 (osteology; phylogeny)

Plecoptera (*see* Stoneflies)

Plectobranchus evides (*see* Prickleback, black-and-white)

Pletcher, Ferdinand Tony
J 21: 1083 (lamprey skin cells)

Pleuronectes platessa (*see* Plaice, European)

Pleuronichthys coenosus (*see* Sole, C-O)

Pleuronichthys decurrens (*see* Sole, curlfin)

Pneumatophorus colias (*see* Mackerel, chub)

Pneumatophorus diego, P. japonicus (*see* Mackerel, Pacific)

Poacher, Atlantic sea (*see* Sea Poacher, Atlantic)

Poacher, blackfin (*Bathyagonus nigripinnis*) (black-finned sea-poacher)
B 68: 286, **68R:** 327 (full description)

Poacher, blacktip (*Xeneretmus latifrons*) (*Xenopyxis latifrons;* black-tipped sea-poacher)
B 68: 289, **68R:** 328 (full description)

Poacher, deep-pitted (*Bothragonus swanii*) (deep-pitted sea-poacher)
B 68: 288, **68R:** 334 (full description)

Poacher, fourhorn (*Hypsagonus quadricornis*) (four-horned sea-poacher)
B 68: 282, **68R:** 323 (full description)

Poacher, pigmy (*Odontopyxis trispinosa*) (pygmy sea-poacher)
J 6: 30 (peculiar variants)
B 68: 287, **68R:** 333 (full description)

Poacher, sea (*see* Alligatorfish, arctic; Sea poacher, Atlantic; *also* Poacher species listed above and below)

Poacher, smooth (*Anoplagonus inermis*) (smooth sea-poacher)
B 68: 292, **68R:** 335 (full description)

Poacher, sturgeon (*Agonus acipenserinus*) sturgeon-like sea-poacher)
B 68: 284, **68R:** 336 (full description)

Poacher, tubesnout (*Pallasina barbata aix*)
J 9: 143 (description)
B 68R: 325 (description)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews. **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Poacher, warty (*Occa verrucosa*) (warty sea-poacher)
B 68: 283, **68R**: 324 (full description)
SS 822 (new B.C. record)

Poacher, windowtail (*Agonopsis emmelane*) (*Averruncus emmelane*; window-tailed sea-poacher)
B 68: 285, **68R**: 326 (full description)

Pododesmus macroschisma (*see* Oyster, rock)

Poecilichthys exilis (*see* Darter, Iowa)

Pogonias cromis (*see* Drum, black)

Pogonophora (*see* Beardworm)

Pogy (*see* Menhaden, Atlantic)

Point . . . .(*see* name of point)

Poisons, for natural waters
J 7: 22 (copper sulphate for lake); **12**: 618 (derris for lake trout competitors)
PRA 17: 8, **26**: 6 (copper sulphate for lakes)
CSG 8 (derris for coarse lake fish)
S 137, 138, 206, 213, 229 (copper sulphate); **229, 242** (rotenone); **311** (survey of use against fish & parasites)
SS 654 (for stream fish disease control); **809, 861, 895** (before trout restocking)

Poisons, general (*see also* Botulism; Disinfectants; Lampricides; Salmonellosis; Shellfish occasional toxicity; *Staphylococcus*; Toxicity)
C 4: 1 (for woodborers); **6**: 423 (metals of water-sampling bottle); **7**: 67 (freshwater toxic to *Pseudopleuronectes*)
J 8: 486 (metals toxic to lobsters); **10**: 253 (phytoplankton autotoxins & antibiotics); **14**: 64 (lacustrine & marine algae toxic to animals)
B 115: 14 (bloodworm bite poisonous to man)
PRA 44: 3 (pathogenic, from unsanitary shellfish)
PRP 55: 7 (jellyfish sting); **61**: 13 (human allergy to fish proteins)

Poland
SS 629 (fisheries biology & culture)

Polistotrema deani (*see* Hagfish, black)

Polistotrema stoutii (*see* Hagfish, Pacific)

Pollachius virens (*see* Pollock)

Pollack (*see* Pollock)

Pollard, Robert Anthony
J 12: 706 (seepage measurement through salmon spawning gravel)
PRP 99: 20 (measuring oxygen supply to salmon redds)

Pollock (Atlantic) (*Pollachius virens*) (Boston bluefish; blister-back; merlan; pollack)
C 1901: 61 (re Maritimes sardine industry); **1917–18**: 111 (age & growth, Bay of Fundy); **1918–20**: 99 (putrefaction rate); **2**: 21 (insulin in); **3**: 467 (muscle tensile strength re smoking); **8**: 291 (slime & intestinal bacteria), 531 (plastic from muscle)
J 7: 96 (thiaminase in); **13**: 861 ("bilgy" odour in poorly iced); **14**: 859 (nematodes in); **16**: 820 (Miramichi estuary, N.B.); **20**: 679 (tissue explant cultures), 1267 (biology)
B 7: 7 (insulin from); **59, 89** (liver oil; see their indexes); **155**: 212 (full description)
PRA 20: 3 (trimethylamine oxide reduction during spoilage); **73**: 4 (skins for glue)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CNG 64: 17 (productive capacity)
CSG 2 (offshore landings, 1938–40)
CSS 1–6 inclusive (N.S. landings, 1947–52)
NSB 8: 24 (life history, Nfld.)
S 54: 161 (weights of body, liver & gonads)
SS 171 (tide effect on distribution); **273** (insulin from); **1368** (length frequencies)

Pollock (Pacific) (*see* Whiting (Pacific))

Pollock, walleye (*see* Whiting (Pacific))

Pollution of natural waters (*see also* Insecticides)
C 1901: 9, 15 (pulpmill), 11, **1902–05**: 37, 111 (sawdust); **1901**: 15 (gas works effluent), 18 (nail factory effluent); **2**: 69. **5**: 436 (sewage)
J 5: 1, **7**: 55 (sewage); **12**: 682, **14**: 783, **21**: 1281 (pulpmill effluent); **14**: 33 (dissolved organic substances in sewage);

15: 559 (trout tolerance to cyanide & detergents); **21:** 17 (tolerance to Cu & Zn compounds)

B 39 (pilchard reduction waste); **60:** 78 (oysters as carriers); **72:** 92 (N.W.T.); **83** (pulpmill)

PRA 36: 15 (fish-plant water supply)

PRP 16: 14, **20:** 14 (pilchard reduction plant effluent); **76:** 66, **101:** 23 (pulpmill, Alberni Inlet; correction on **102:** 2); **95:** 58, **97:** 14 (sewage, Nanaimo Harbour); **102:** 6, **110:** 6 (proposed pulpmill, Osborne Bay, B.C.); **104:** 26, **106:** 3 (Steveston cannery basin, B.C.); **109:** 3 (from dredging waterlogged sawmill waste); **114:** 13 (various types, B.C. coast)

CNG 57 (pulpmill, B.C.)

CSG 38, 42 (Cu & Zn compounds in mine waste)

S 431 (pulpmill, Alberni Harbour, B.C.); **503** (re sockeye salmon environmental stress); **510, 627, 643, 737** (pulpmill or sewage, B.C. coast); **676** (pulpmill effluent effect on Atl. salmon); **734** (seawater trace pollutants extractor); **743** (types of B.C. coastal & river pollution); **796** (sulphur compounds in kraft pulp effluents); **881** (sublethal mining effluent)

SS 15, 17 (sawdust); **382** (Winnipeg R., Ont.); **898** (prediction of pulpmill pollution); **931** (model of Alberni Harbour, B.C., for test of pulpmill); **1054** (sewage, Nanaimo Harbour); **1100** (pulpmill, Alberni Harbour); **1135** (pulpmill effluent storage ground study); **1188** (re Atl. salmon rivers); **1271** (disposal in estuarine embayments); **1312** (research required on water quality for fish); **1349** (radioactive wastes disposal at sea); **1377** (sulphite & sulphate wastes detection method)

Polychaeta (*see also* Annelida; *Eudistylia*; Spionidae; *also* certain other classifications)

C 1917–18: 237 (Canadian); **1:** 203, **2:** 285, **3:** 405, **4:** 305, **6:** 65 (near Nanaimo, B.C.); **1:** 441 (*Eudistylia*); **7:** 277 (*Haplobranchus atlanticus*), 309 (W coast Vancouver Is.)

J 3: 348 (*Hemipodia canadensis*); **6:** 129 (Hudson Bay), 472 (Bay of Fundy), 498 (*Polydora*); **7:** 363 (*Odontosyllis* swarming off Bermuda); **8:** 488 (*Trypanosyllis ingens*); **10:** 85 (*Micronereis nanaimoensis*); **11:** 326 (*Dodecaceria fewkesi*), 454 (new records), 507 (E arctic); **13:** 233 (Atl. Oecan; W arctic), 541 (Pac. Ocean); **15:** 801 (W Canadian Arctic); **16:** 474 (Igloolik vicinity, N.W.T.)

AF 9b (Atl.)

PF 9b(1) (Errantia); **9b(2)** (Sedentaria)

S 5 (*Polydora*); **10** (Mn compounds in tubes); **13** (pentose in *Eudistylia* & *Mesochaetopterus*); **14** (organic constituent of tubes); **65** (new Chaetopteridae genus); **106** (green bodies); **153** (Spionidae); **181** (Syllidae); **199** (*Rhamphobrachium longisetosum*); **307** (Polychaeta Sedentaria); **320** (*Potamethus elongatus*); **353** (swarming); **447** (*Epidiopatra* from Hecate Strait); **451** (new *Nereis* & *Tharyx* records); **491, 530, 616** (NE Pac. pelagic); **587** (Minas Basin, N.S.); **597** (California, Mexico & Panama coast); **623** (errant & sedentary of arctic); **660** (California to Peru); **694** (marine of B.C. & W Canadian Arctic); **830** (Peruvian coast); **831** (*Lycastopsis* proboscis)

SS 49 (copepod parasite of); **50** (Serpulidae); **73, 129, 1280** (*Odontosyllis* swarming); **74** (*Trypanosyllis* stolon formation); **95** (NE Pac. Chaetoptera); **166** (migrations); **420, 740, 794** (NE Pac.); **529, 725** (Californian); **669** (Mexican); **739** (*Ctenodrilus* occurrence); **770** (W Canadian Arctic); **870** (*Myriochele heeri* morphology); **1033** (marking method)

Polydora (*see* Worm, mud-blister; *also* Annelida; Polychaeta)

Polygamy

PRP 90: 8 (lobster)

Polyipnus asteroides (*see* Hatchetfish)

Polymerization of oils (*see also* Bodying)

B 59, 89 (processes & products; *see* their indexes)

Polymixia nobilis (*see* Beardfish, stout)

Polynices (marine snails) (*see also* Whelks)
  J 12: 287 (egg masses)
  B 60: 52 (Atl. oyster predator)
  PRA 32: 8 (Atl. clam predator)
  PRP 50: 21 (Pac. clam predator)
  S 13 (tissues pentose compounds); **844** (sperm deoxyribonucleic acids)
  SS 166 (migrations)

Polyodon spathula (*see* Paddlefish)

Polypera greeni (*see* Snailfish, lobefin)

Polyphemus (*see* Cladocera)

Polyprion americanus (*see* Wreckfish, Atlantic)

Polypus hongkongensis (*see* Octopus)

Polysiphonia (red seaweeds)
  CNG 44: 15 (herring spawning substrate)

Polyunsaturation (*see* Unsaturation)

Polyzoa (*see* Bryozoa)

Pomatomus saltatrix (*see* Bluefish)

Pomfret, bigscale (*Taractes longipinnis*) (Johnson's seabream)
  B 155: 258 (full description)

Pomfret, smallscale (*Brama rayi*) (Ray's bream)
  J 17: 221 (NE Pac. distribution)
  B 68: 143, **68R**: 220 (full description of Pac.); **155**: 257 (full description of Atl.)
  PRP 109: 6 (NE Pac. catches & feed)
  CNG 64: 50 (abundant offshore B.C.)
  S 699 (host of *Lampritrema* trematode); **851**: 57 (possible B.C. resource)
  SS 384 (Queen Charlotte Is.)

Pomolobus aestivalis (*see* Herring, blueback)

Pomolobus pseudoharengus (*see* Alewife)

Pomoxis annularis (*see* Crappie, white)

Pomoxis nigromaculatus, P. sparoides (*see* Crappie, black)

Pompano, California (*see Pompano, Pacific*)

Pompano, Pacific (*Palometa simillima*) (*Peprilus simillimus*; California pompano)
  B 68: 201, **68R**: 231 (full description)
  S 302 (increased abundance on B.C. coast)

Pond culture for fish (*see also* Hatcheries)
  J 20: 327 (influence on brook trout movements & angling)
  PRA 17: 10 (trout)
  PRP 9: 3, **10**: 10 (for sockeye salmon); **26**: 3 (white vs. black ponds for trout)
  CCG 3: 19 (rainbow trout); **4**: 9 (rainbow trout, in Germany)
  S 689 (types & possibilities in Canada)
  SS 441 (fertilization); **492** (control problems); **621** (sampling errors re weight); **977** (brook trout)

Pond weed
  C 1: 136 (*Potamogeton*)
  PRP 74: 9 (*Potamogeton*)

Pools (*see also* Tidepools)
  SS 275 (biota of granite & limestone)

Popeye (*see* Sole, C-O)

Population studies and dynamics (*see also* Abundance; Census; Marking; Productivity; Statistics; Tagging; *also* names of organisms; names of international commissions)
  J 14: 669 (re commercial marine fisheries management); **15**: 19, 749 (size estimation methods); **16**: 73 (mortality estimates from virtual populations), 695 (trout, Loon L., B.C.); **18**: 337 (spawning Pac. salmon counts from air); **20**: 59 (lobsters), 195 (*Tilapia esculenta* of Lake Victoria, E Africa), 257 (2 examples of big effects from small causes), 647 (interspecific competition & exploitation), 839 (application of Paloheimo linear equation for estimating mortalities), 1067 (Atl. herring), 1213 (maskinonge), 1371 (maximum yield of sockeye stocks), 1431 (use of coloured tags); **21**: 1 (sustained yields from fluctuating environments), 477 (theoretical reproduction curves), 727 (maskinonge), 905 (pink & chum salmon), 1019 (pink salmon sea mortality rates), 1051 (Pac. cod), 1245 (model for Pac. salmon), 1329 (sockeye salmon stock size & resultant production), 1385 (recruitment of pink salmon eggs to spawning bed)
  B 55: 8 (B.C. merganser re fish); **84** (game fish of Cowichan R., B.C.); **111**

(Atl. herring); **119** (computations for biological statistics of)
PRA 1: 10, **14:** 3 (local, of haddock); **37:** 10 (lobster); **43:** 9 (trout)
PRP 11: 10 (trout); **12:** 12, **35:** 3, **39:** 5, **41:** 20, **45:** 14, **49:** 11, **50:** 3 (local, of B.C. herring); **66:** 4, **93:** 13, **97:** 21, **109:** 12 (B.C. herring in general); **72:** 36 (harbour seal)
CAG 1 (E arctic seals); **4, 5** (harp seals)
CCG 3: 17 (Heming L., Man.)
S 363, 397, 411, 423, 464, 500, 683 (B.C. herring); **409** (B.C. salmons); **413** (NW Atl. groundfish); **416** (harp seal); **610** (NW Atl. haddock stocks); **623** (arctic infaunal benthos); **713** (regulation of pink salmon); **714** (dynamics, of pink salmon); **765** (re E Canadian Arctic seals exploitation); **812** (population dynamics theories); **870** (harp seal, by cranial variation); **873** (re B.C. herring stocks & recruitment)
SS 418, 889 (lakes productivity & population estimation); **462** (B.C. herring); **666** (American shad); **860** (vital statistics estimation method); **1302** (theory development for dynamics of abundance)

Porbeagle (*Lamna nasus*) (*L. cornubica; Isurus nasus*; Atlantic mackerel shark)
C 1901: 55 (paired fins)
J 16: 811 (off Miramichi R.); **20:** 1153 (composition & palatability); **21:** 863 (morphometric description)
B 140: 12 (NW Atl.: description & distribution); **155:** 32 (full description)
PRP 34: 16 (gear & bait)
AF 12e: 13 (description)
S 159 (rare in Passamaquoddy Bay)
SS 1315 (drift bottle swallowed by)

Porcupinefish (*see* Burrfish, striped)

Porgy (*see* Scup; Seaperch, redtail)

Porgy (Japanese) (*Taius tumifrons*)
J 19: 1143 (length distribution analysis)

Porgy, sheepshead (*see* Sheepshead)

Porichthys notatus (*see* Midshipman)

Porifera (*see* Sponges)

Poroclinus rothrocki (*see* Prickleback, whitebarred)

Poronotus triacanthus (*see* Butterfish)

Pork
J 7: 74 (B-vitamins of flesh); **12:** 641 (liver extracts & hydrolysates)
CVI 17 (flesh amino acids)
S 819 (fatty acids positioning in depot fat)

Porpoise, common (*Phocoena phocoena*) (puffing pig)
J 14: 111 (NW Atl.); **15:** 1 (*Phocanema* parasite); **20:** 1085 (from Greenland shark stomach)
CAG 7 (identification)
SS 77 (albino)

Porpoise, Dall (*Phocoenoides dalli*)
J 11: 267 (parasite of)
PRP 14: 14 (jaw, skull & blubber oil analyses); **34:** 16 (bait for); **71:** 5 (blubber oil)
CNG 32R: 10 (description); **68** (distribution)
S 851: 63 (in B.C. fishery)

Porpoise, harbour (*Phocaena vomerina*)
J 11: 267 (parasite of)
CNG 32R: 10 (description); **68** (distribution)

Porpoise Harbour, B.C.
J 19: 1163 (amphipods in low-oxygen polluted water)

Porpoises (*see also* Whale, killer)
B 59, 89 (oils; *see* their indexes)
PRP 34: 16 (gear & bait)
CNG 32R (identification & description of Pac.)
SS 1405 (commercial uses, Ceylon)

Porrocaecum decipiens (*see Phocanema decipiens*)

Port John Lake and Hooknose Creek, B.C.
J 11: 69 (juvenile salmon behaviour), 624 (lake's trophic status); **15:** 251 (salmon learning experiments), 1103 (pink & chum salmon production); **16:** 835 (pink & chum production & list of other fishes; correction on **17:** 943); **21:** 1019 (pink salmon sea mortality)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

PRP 77: 105, **79**: 33, 42, **80**: 55, **82**: 10, **83**: 48, **85**: 90, **88**: 60, 70, **89**: 87 (counting fence; spawning runs; spawning; survival; escapement; of chum, sockeye, pink & coho salmons)

SS 1025 (pink & chum salmon)

Portuguese man-of-war (*Physalia*) (*see also* Jellyfish)

PRP 55: 7 (sting)

Potassium compounds

J 13: 273 (K, Ca, Na ion ratios in river-diluted fiord waters); **16**: 7 (in Atl. coastal seawater); **17**: 323 (in maturing coho salmon)

PRP 101: 17 (in salmon & tuna canned without salt); **104**: 19 (in fish held in refrigerated seawater); **105**: 19 (in commercial fresh fish flesh); **114**: 19 (in frozen albacore)

S 434 (in B.C. fishes flesh); **478, 515** (bacteria requirement for); **547** (variations in migrating Pac. salmons flesh); **615** (in fish held in refrigerated seawater)

Potential, electrical (*see* Electricity; Electrofishing; Shock (electrical))

Potter, Gilbert David

J 11: 63 (chum salmon androgens)

Potter's Lake, N.B.

PRA 32: 3 (smallmouth black bass growth)

Potts, F. A.

SS 53 (NE Pac. Polychaeta; a new rhizocephalan); **73** (*Odontosyllis* swarming); **74** (*Trypanosyllis* stolon formation); **95** (NE Pac. Polychaeta)

Poultry feed (*see also* Feedstuffs; Meals)

J 18: 113 ("liquid herring" protein value); **20**: 229 (B.C. whole herring meal nutrient composition)

B 59: 315, **89**: 279 (fish-oil vitamins A & D); **75**: 21 (hens' susceptibility to clam toxin)

PRA 65: 24 (cod & haddock offal ensilage)

PRP 85: 83 (significance of meals & condensed solubles); **87**: 42, **89**: 79, **90**: 10, **92**: 10, **94**: 27, **99**: 12, **101**: 27, **108**: 24, **111**: 23, **113**: 3 (herring meals, stickwater, condensed solubles & autolysates: nutritive values, vitamin B_{12}, etc., for chicks); **92**: 10, **113**: 3 (herring meal & condensed solubles for turkey poults; correction on **J 16**: 931); **101**: 27 (whale condensed solubles & dried solubles, for chicks)

CVG 25 (herring meals lipid significance); **26** (whole herring meal)

S 373, 374, 425, 641, 651, 704 (herring meal); **593, 613, 617, 636, 667, 691, 809** (marine oils, cholesterol, vitamins); **701** (hypocholesterolemic agents from algae); **809** (effect of excessive vitamin A)

SS 341, 342 (effect of fish putrefaction on meals); **959** (heat effect on herring meal folic acid)

Poultry products

S 499 (preservatives for); **505** (antibiotics as preservatives); **809** (vitamin A re egg production)

Pout (in addition to following species, *see* Bullhead; Burbot; Eelpout)

Pout, Atlantic soft (*Melanostigma atlanticum*)

J 16: 513 (in lower St. Lawrence R.)

B 155: 328 (full description)

Pout, eel (*see* Eelpout; Pout, ocean)

Pout, green ocean (*see* Doctor, fish)

Pout, ocean (*Macrozoarces americanus*) ("conger eel"; eel pout; mother-of-eels; muttonfish)

C 1902–05: 88 (Canso, N.S.), 91 (trematode parasites); **1918–20**: 69 (biology), 99 (putrefaction rate); **1**: 413 (body temperature); **2**: 119 (insulin in); **3**: 467 (muscle tensile strength re smoking); **8**: 275 (flora of slime & intestine)

J 4: 337 (nesting & embryo); **7**: 96 (thiaminase in); **10**: 539 (*Phocanema* host); **16**: 827 (Miramichi Bay); **17**: 763 (nematodes in)

B 4 (life history; fishery); **155**: 326 (full description)

S 5: 6 (tank observations); **17**: 19 (insulin in); **71** (digestive system)

SS 134 (unutilized resource)

Powell Lake, B.C.

PRP 12: 7 (probably a former fiord)

S 123 (probably a former fiord)

SS 1312 (proved a former fiord)

Power, Henry Edwin

J 13: 21 (deck & hold fish treatment); **15**: 537 (illumination for cod fillet candling for nematodes); **18**: 137 (nematode detection by slicing fillets); **19**: 1039 (improved cod protein concentrate preparation); **20**: 1081 (aquarium for marine animal experiments); **21**: 813 (storage of irradiated scallops), 827 (gamma irradiation of haddock fillets), 1489 (fish protein concentrate)

PRA 40: 6 (aluminum filleting table); **49**: 3 (new cod liver processing method); **56**: 3 (fillet conveyor belt); **60**: 9 (haddock fillet quality)

CHN 6 (cod fillet slicing machine); **10** (improved fish protein concentrate); **13** (continuous-flow seawater aquarium); **15** (fish protein concentrate characteristics); **16** (fresh fish flesh water content fluctuations); **18** (preservation by gamma radiation)

Power, tidal (*see* Tidal energy)

Powles, Percival Mount

J 15: 1383 (Atl. cod reproduction & feeding)

Prairie Provinces of Canada (*see also* Alberta; Manitoba; Saskatchewan; *also* names of localities, bodies of water, and fishes of those Provinces; *also* Fishes, freshwater)

SS 358 (fishing industry & investigations)

Prakash, Anand

J 19: 101 (factors affecting Atl. shellfish toxicity), 851 (coho & chinook salmon seasonal feeding changes); **20**: 983 (Atl. shellfish toxin source)

PRP 112: 7 (feed factor in coho salmon growth)

S 727 (toxic shellfish research); **749** (trout gastrointestinal phosphate)

Prawn (*Pandalus platyceros*) (*see also* Shrimps (Pacific))

J 21: 1403 (B.C. growth, reproduction, distribution)

PRP 74: 13 (distinction from similar crustacea); **83**: 30 (description & B.C. fishery); **101**: 3 (prospecting for)

CNG 28, 31, 35, 39, 55 (B.C. prospecting, 1953–59); **67** (improved trap for)

S 453, 851: 58 (B.C. fishery & prospects)

Precipitation (*see* Dilution effect; Storms; Weather)

Precision

B 125: 5 (statistical limits, for oceanographic data)

S 583 (of oceanographic data); **855** (of data for underwater sound speed)

Predation (*see also* Birds, predator; Feed studies; Predators)

B 133: 79 (definition; principles of)

SS 479, 611, 612, 645 (re fish culture)

Predators, aquatic (and their control) (*see also* Feed studies; Parasites)

C 1902–05: 30 (seal control by dynamite); **1915–16**: 41 (of coho salmon); **1917–18**: 5 (sea lions); **1921**: 30 (of mussels); **1**: 291 (of fish near Nanaimo, B.C.); **2**: 138, **3**: 367, **5**: 203 (of trout); **2**: 411, **5**: 80 (of sockeye salmon); **2**: 458 (of cunner)

J 2: 89 (of mussels); **5**: 293, 315 (of sockeye); **9**: 450 (of pink & chum salmon); **10**: 211 (theory); **11**: 362 (on Atl. salmon parr), 609 (effect on survival); **12**: 216 (eels on trout), 522 (of whitefishes), 543 (of lake fishes); **15**: 529, 1355 (drills on clams & oysters); **16**: 247, 269 (trout on shiners), 867 (sculpin & coho on salmon fry); **17**: 687 (aquarium for predator–prey studies); **19**: 979 (predator–prey relations of pikes); **20**: 451 (starfish on scallops), 1067 (fishes on Atl. herring eggs); **21**: 1083 (Pac. lamprey distasteful to predators), 1155 (oyster drills in B.C.)

B 25: 21 (of haddock); **30**: 17 (of crabs); **58**: 10 (eel on N.S. salmon); **60**: 43 (of oysters); **68, 68R** (of & by B.C. marine fishes); **93**: 47 (by seals); **155** (of & by Canadian Atl. marine fishes)

PRA 7: 6, **67**: 19 (eel on Atl. salmon fry); **17**: 7, **27**: 13, **28**: 3, 4, 5 (starfish on Atl. oyster); **37**: 14 (oyster drill & its control); **52**: 3 (winter flounder on clams); **69**: 7 (boring sponge on oyster, & its control)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

PRP 18: 3, **25**: 20, **32**: 21, **33**: 3, **36**: 20, **80**: 55 (salmon, trouts, squawfish, etc. on young Pac. salmons); **50**: 21 (invertebrates on clams); **66**: 12, **67**: 23, **68**: 55, **69**: 70, **70**: 10, **74**: 6, 9, **78**: 6 (of Skeena R. drainage lakes young salmon); **73**: 65 (comb-jellies on herring larvae); **75**: 57 (by hagfish); **104**: 15 (lamprey on salmon fingerling)

PRC 1: 3, 6, 9, 15, 18, 22, **2**: 14, 18, 21, 25, 27, 32, 36 (sea lamprey in Great Lakes & its control)

CCG 5: 14 (by sea lamprey)

NRB 17: 132 (of Atl. capelin)

S 50 (of Entomostraca); **141** (in pond culture); **148, 295** (of Pac. salmons); **160** (by fur seals); **340** (theory; correction on **J 12**: 941); **341** (of trout); **385, 459** (control at Crecy L., N.B.); **507** (of young Atl. salmon)

SS 96 (medusae on fish eggs & larvae); **195** (of N Pac. fishes); **214** (in Strait of Georgia); **560** (of blue mussel)

Predators, bird (*see* Birds; Birds, predator)

Predators, insect

SS 504 (caddis fly on pink salmon)

Predators, terrestrial

C 2: 417 (garter snake on salmon fry)

J 9: 456 (bears on B.C. salmon spawners); **12**: 216 (control, at Crecy L., N.B.)

B 58: 11 (otter & mink on Atl. salmon); **97**: 16 (on kingfisher)

PRP 77: 105 (bears on salmon)

S 385 (control, Crecy L.)

SS 506 (muskrat on pink salmon)

Prediction (*see* Forecasting)

Préfontaine, Georges

J 6: 459 (obituary of Frère Marie-Victorin)

Premdas, Francis Herman

J 20: 827 (Atl. salmon DDT biochemistry)

Preservation by irradiation (*see* Irradiation)

Preservatives, chemical (other than tetracycline antibiotics) (*see also* Antibiotics, tetracycline types; Antioxidants; Disinfectants; Formaldehyde; Ice; Salt; Smoking; Sodium nitrite)

J 4: 327 (benzoic acid), 355 (citric & lactic acids); **5**: 121 (citric, lactic & tartaric acids), 148, **6**: 257 (various); **5**: 244 (sodium phosphate), 276 (various, as "dun" fungistats); **6**: 17 (various, as halophilic bacteria inhibitors), 233 (sodium nitrate), 349, **10**: 69, **13**: 201 (hydroxylamine); **6**: 441 (potassium iodate; glucose); **7**: 155 (various, in ices), 221 (sulpha compounds), 461 (sodium nitrate reduction to nitrite); **8**: 202 (nitrate inhibition of reducing enzyme); **16**: 689 (for stickwater); **17**: 595 (benzoate inhibition of amine formation)

B 100: 26, **103**: 8 (dips for fish & fillets); **124** (antibiotic for fishery products)

PRA 3: 13 (formaldehyde, for bait); **10**: 7 (hydrochloric acid); **19**: 6, **22**: 8 (for wood, against shipworm); **24**: 3, **26**: 3 (acid dips for fresh fillets); **40**: 7 (chlorinated dips for fresh fillets); **56**: 14 (nitrite dips); **68**: 17 (organic liquid, for cod livers)

PRP 25: 3, **49**: 19 (for linen fishing nets); **31**: 14 (from pilchard oil); **35**: 24 (boric & benzoic acids in ice); **36**: 7 (acetic acid; salicylic acid; borax); **37**: 7 (benzoic, citric & lactic acids, & phosphate, for smoked fish); **39**: 13 (benzoic acid; boric acid; hydrochloric acid; sulphur dioxide; for fillets); **43**: 10 (lactic acid for fillets); **47**: 5 (various, for brining fillets); **67**: 36 (sulpha derivatives; penicillin; benzoic acid; in ices); **85**: 35 (various, for fish); **98**: 22 (amine bacteriostats); **99**: 22 (mould inhibitors); **107**: 13, **108**: 27 (various, for marine woodborer control)

CHN 18 (cobalt–60 irradiation)

S 222, 670 (various: uses, applications, regulations); **370, 499, 524, 571, 672** (reviews); **408** (for herring stickwater); **417** (for smoked fish)

SS 552 (various methods); **720, 721, 735, 1309** (against microbiological spoilage agents); **1132** (problems re use); **1403** (for Ceylon fish)

Press-cake (*see* Meals)

Press-liquor (*see* Solubles, condensed; Stickwater)

Pressure, atmospheric

J 15: 1171 (effect on sea level & tidal flow)

Prey (*see* Feed studies; Predation; Predators)

Pribilof Islands
SS 952 (fur sealing)

Price, John Lionel
S 591 (infecting cyclopid copepods with *Triaenophorus*)

Prices (*see* Marketing)

Prickleback, black (*Epigeichthys atropurpureus*) (black blenny)
C 8: 161 (nematode infection)
B 68: 176, **68R**: 377 (full description)
S 290 (B.C. range extension)

Prickleback, black-and-white (*Plectobranchus evides*)
J 16: 759 (first B.C. record)
B 68R: 372 (description)

Prickleback, cockscomb (*Anoplarchus purpurescens*) (crested blenny)
B 68: 183, **68R**: 375 (full description)
S 290 (W coast Vancouver Is.)

Prickleback, decorated (*Chirolophis polyactocephalus*) (decorated blenny)
B 68: 178, **68R**: 373 (full description)

Prickleback, longsnout (*Lumpenella longirostris*) (long-snouted blenny)
B 68: 188, **68R**: 369 (full description)

Prickleback, mosshead (*Chirolophis nugator*) (ornamented blenny)
B 68: 177, **68R**: 374 (full description)

Prickleback, ribbon (*Phytichthys chirus*) (belted blenny)
B 68: 174, **68R**: 376 (full description)
S 290 (W coast Vancouver Is.)

Prickleback, rock (*Xiphister mucosus*) (rock blenny)
B 68: 175, **68R**: 376 (full description)
S 290 (B.C. records)

Prickleback, snake (*Lumpenus sagitta*) (*L. anguillaris;* eel-blenny; Pacific snake-blenny)
B 68: 186, **68R**: 371 (full description)

Prickleback, two-spotted (*see* Prickleback, black-and-white)

Prickleback, whitebarred (*Poroclinus rothrocki*) (whitebarred blenny)
B 68: 187, **68R**: 368 (full description)
S 290 (B.C. records)

Prickleback, Y- (*Allolumpenus hypochromus*) (Y-blenny)
C 7: 319 (B.C. new species)
B 68: 185, **68R**: 370 (full description)
PRP 12: 15 (Nanaimo, B.C.)

Priest-fish (*see* Rockfish, blue)

Primary productivity (*see* Productivity)

Prince, Edward Ernest
C 1901: Preface (to "Contributions" publication series), 1 (Canada Marine Biological Station foundation, aims & work), 55 (mackerel shark paired fins); **1902–05**: iii (prefatory review), 95 (clupeoids eggs, & early life history), 121 (Macallum's work on Medusae chemistry); **1906–10**: v, **1911–14(I)**: i, **1911–14(II)**: i, **1914–15**: 5, **1915–16**: v, **1917–18**: v, **1918–20**: 5 (prefatory reviews); **1914–15**: 19 (Atl. halibut eggs & larvae); **1915–16**: 86 (N.B. serially striped haddock)
SS 3 (Canadian fish culture); **6, 28, 45** (early Atlantic Biological Station work); **7** (fish adaptation powers); **24** (fish swim bladder a degenerate gland); **25** (animal coloration), **26** (freshwater ling eggs); **31** (Man. fishes); **54** (obituary of Rev. G. W. Taylor); **75** (Biological Board of Canada); **76** (new cirripede parasite on shrimp); **77** (rare cases of animal albinism); **78** (new Canadian luminous fish); **96** (marine eggs & larvae mortality causes); **97** (a perfect fish pass); **133** (Canadian herring fishery); **134** (unutilized Canadian fishery resources); **135** (red flesh colour of salmons & trouts); **136** (hagfish eggs); **137** (sea squirts); **158, 159** (handling frozen fish); **177** (1914–15 Canadian Fisheries Expedition); **204** (salmon homing instinct); **242** (are fish really cold-blooded?)
J 3: 187 (obituary of)
SS 800 (obituary of)

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Prince Albert Park, Sask.

J 2: 227 (physics & chemistry of lakes)

Prince Edward Island (*see also* names of individual localities, e.g. Ellerslie; names of adjacent bodies of water, e.g. Gulf of St. Lawrence; Malpeque Bay; Northumberland Strait; *also* Oyster, Atlantic; Oceanography, Atlantic (NW coastal waters))

C 1906–10: 217 (oyster & clams); **1914–15**: 55, **1915–16**: 53 (oyster)

B 155 (marine fishes)

PRA 38: 3, **58**: 21 (brook trout angling); **47**: 3 (geology re trout production); **65**: 3 (history of oyster disease)

CSG (*see* list of titles of this series, many of which pertain to Prince Edward Island topics)

S 234 (Malpeque Bay fishes); **278, 279** (ponds in National Park); **283, 648** (oyster disease); **318** (brook trout); **574** (trout fishery); **841** (physiography; limnology; flora; fauna, etc.)

SS 392, 899, 947, 977 (brook trout)

Prince Gustaf Adolph Sea, N.W.T.

SS 1352 (oceanography; plankton)

Prince Rupert Harbour, B.C.

PRP 23: 16, **27**: 8 (herring run); **31**: 14 (tests of shipworm deterrent); **49**: 10 ("red feed")

Princess Louisa Inlet, B.C.

J 18: 907 (oceanography)

PRP 12: 7, **96**: 3 (oceanography re stagnant basin)

S 123 (oceanography)

Prionace glauca (*see* Shark, blue)

Prionistius macellus (*see* Sculpin, roughspine)

Prionotus carolinus (*see* Searobin, northern)

Prionotus evolans (*see* Searobin, striped)

Pritchard, Andrew Lyle

C 5: 467 (W Canada ciscoes); **6**: 225 (Lake Ontario ciscoes spawning & fry)

J 2: 383 (pink salmon upstream migration factors); **3**: 403 (pinks spawning data, McClinton Creek); **4**: 141 (pinks transplantation in barren year, Masset Inlet), 233 (pinks homing tendency & age); **6**: 217 (pinks fry characteristics & behaviour), 392 (pinks gill rakers & pyloric caeca counts); **7**: 224 (pinks natural propagation efficiency)

B 14 (pink & chum salmon tagging, 1928); **31** (pink & coho salmon tagging, 1929–30); **40** (coho tagging, 1929–30); **41** (chinook salmon tagging, 1929–30); **65** (chinook & coho feed); **66** (pinks migration, N Washington & S B.C., 1943); **101**: v (Foreword)

PRP 8: 15 (chinook salmon tagging); **9**: 7, **51**: 8 (coho salmon tagging); **9**: 12 (pink & chum salmon tagging); **10**: 5, **33**: 3 (pinks investigations); **15**: 10, **20**: 3, **48**: 13, **57**: 8 (marked pinks returns); **28**: 3 (Pac. salmons egg contents); **29**: 16 (commercial coho ages); **34**: 8 (marking & natural propagation of pinks); **35**: 14 (attempts to produce off-year pinks run); **41**: 6 (pinks natural propagation); **42**: 3, **47**: 14, **53**: 3 (pinks feed); **43**: 14 (Lakelse L. sockeye salmon run); **44**: 9 (commercial chinook ages); **51**: 3 (marked coho returns); **54**: 6 (salmon angling, Cowichan Bay); **54**: 9 (commercial chum ages); **55**: 10 (coho feed); **58**: 8 (marking pinks, B.C. & Puget Sound); **61**: 8, **65**: 77, **70**: 13, **75**: 40 (sockeye tagging off Skeena R.); **62**: 4 (sockeye tagging, Lakelse L.), 14 (Cowichan R. coho spawning runs); **66**: 12 (Lakelse L. limnology); **67**: 23 Morice L. limnology); **75**: 46 (Skeena R. sockeye run)

CNG 14 (Skeena R. salmon catch predictions, 1948)

S 129 (tagging re B.C. fish conservation); **148** (fish predators of young salmon fry, McClinton Creek); **232** (pink salmon natural propagation); **236** (coho & chinook salmon age studies); **248** (pink & sockeye size vs. egg content); **257** (pinks upstream migration); **268** (pinks distant sea migration); **287** (Skeena R. anadromous fish conservation); **288** (Pac. salmon natural propagation efficiency)

SS 345 (a B.C. ragfish); **384** (a B.C. Ray's bream); **385** (B.C. pink salmon); **409** (Lake Ontario ciscoes taxonomy & life history); **437** (tagging re B.C. salmon conservation); **460** (Pac. saury from Queen Charlotte Is.); **504** (do caddis fly larvae kill fish?); **505** (water ousel); **506** (muskrat introduction to Queen Charlotte Is.);

539 (Pac. salmons meristic variations); **540, 773** (identification of young Pac. salmons); **563, 564** (Ont. lakes higher aquatic plants); **602** (Pac. salmons home stream theory); **658** (conservation a fishery goal); **671** (Pac. salmons migrations); **717** (blueback salmon a riddle); **831** (do small salmon produce small salmon?); **832** (Pac. salmons natural propagation efficiency); **858** (pinks marine mortality); **892** (Skeena R. salmon investigation)

Probabilities, theory of

S 303 (caution re use in scientific research)

Proboscis

S 831 (of *Lycastopsis* nereid)

Procellaria gravis (*see* Shearwater, greater)

Processing (*see also* Canning; Chilling; Cod, salt; Freezing; Herring, salt; Meals; Pickling; Reduction; Refrigeration; Salt fish; Smoking; Solubles, condensed; etc.; *also* under names of commercial fishes, etc., and their products)

B 37, 59, 89 (marine animal oils for various uses; *see* their indexes)

CVG 15 (effects on nutritive factors in fish)

S 728 (pilot plant for Canadian Arctic); **742** (handling problems re fishery products)

SS 552, 1015 (fish for food); **1265** (effects on fish products)

Productivity (*see also* Abundance; Fertilization of waters; Limnology; Plankton; Populations; *also* other cognate subjects)

J 8: 369 (clams), 383 (N.B. lakes); **10:** 224 (plankton in western Canadian lakes); **11:** 624 (Port John L., B.C.); **13:** 7 (Trevor Channel & Alberni Inlet, B.C.), 515 (B.C. lakes); **21:** 505 (primary, of B.C. fiord)

B 42: 1 (Kamloops lakes, B.C.); **56:** 19 (Okanagan L., B.C.); **72:** 87 (N.W.T.); **122** (phytoplankton); **143** (B.C. herring)

PRA 8: 3 (failure, of Atl. oysters); **20:** 6, **26:** 6 (of Maritimes lakes); **35:** 3 (soft-shell clams); **36:** 6, **38:** 3, **42:** 7, **47:** 3 (trout); **39:** 11 (smelt larvae)

PRP 21: 14 (plankton, re sockeye salmon fry feed); **24:** 21 (algae, after fertilizing water); **39:** 19 (B.C. clams); **54:** 14 (butter clam); **113:** 13 (primary, in NE Pac. & B.C. coastal waters)

CNG 64 (possibilities of Canadian fisheries)

CPO 1959-20, 1960-5, 1961-21, -26, 1962-13 (primary, in NE Pac.); **1960-20, 1961-19** (primary, in submerged plastic bag in sea)

S 37 (of lakes); **295** (methods of computation, for fishes); **484** (re reproduction & yield); **502** (*Themisto* as indicator of, in northern seas); **511** (stream ecology re Pac. salmon); **612** (NE Pac. Ocean); **623** (arctic marine infaunal benthos); **631** (primary, of NE Pac.); **644, 682, 816** (primary, in sea-submerged plastic sphere); **753, 754, 755** (tracing marine primary by carbon isotope); **762** (*Sagitta* as indicator for primary); **828** (diurnal photosynthetic variation in NE Pac.)

SS 418, 626, 641, 819 (re fish populations), **797** (sockeye salmon by lakes); **810** (mathematical formulation); **866** (B.C. clams); **894** (Great Slave L.); **966** (Bay of Fundy); **1304** (Canadian fisheries); **1375** (phytoplankton re primary)

Propagation (*see also* Hatcheries; Pond culture; Reproduction; *also* names of individual organisms *and* other cognate subjects)

PRP 8: 11, **11:** 10, **26:** 3 (B.C. trouts); **10:** 5, **34:** 8, **35:** 14, **41:** 6, **77:** 105, **79:** 33, **88:** 70, **93:** 7 (pink salmon); **10:** 10, **14:** 5, **19:** 23, **77:** 105, **79:** 33, **91:** 13 (sockeye salmon); **15:** 3, **29:** 10, **31:** 6, **43:** 8, **102:** 20 (Pac. oyster); **47:** 19, **77:** 105, **79:** 33 (coho salmon); **70:** 20, **77:** 105, **79:** 33, **93:** 7 (chum salmon); **72:** 43 (Atl. lobster in B.C.)

CNG 60 (B.C. herring)

SS 434 (Kamloops & rainbow trouts); **583, 590, 613, 1022** (natural vs. artificial for sockeye salmon); **722** (Fraser R. sockeye); **832** (efficiency of natural, for salmons)

Prorocentrum (dinoflagellate)
S 549 (morphodynamics; protoplasm; taxonomy)

Prosopium (in addition to following listed species, *see also* Ciscoes; Whitefish)
J 13: 759 (northern B.C. distribution & synonomy); **14**: 599 (evolution & distribution); **18**: 679 (osteology & phylogeny)

Prosopium abyssicola (*see* Whitefish, Bear Lake)

Prosopium coulteri (*see* Whitefish, pigmy)

Prosopium cylindraceum, P. quadrilaterale (*see* Whitefish, round)

Prosopium gemmiferum (*see* Cisco, Bonneville)

Prosopium spilonotus (*see* Whitefish, Bonneville)

Prosopium williamsoni (*see* Whitefish, mountain)

Prospecting (*see* Exploration; Surveys)

Protamine
PRP 71: 5, **80**: 47 (uses, from salmon milt)

Protein concentrate ("fish flour")
J 18: 85 (as dietary protein source); **19**: 1039 (improved preparation method); **21**: 1489 (characteristics & nutritive value)
PRA 67: 29 (from cod & haddock offal)
CHN 10 (improved production method); **15** (characteristics from various raw fish materials)
SS 1202, 1328, 1383 (from cod, haddock & other Atl. fishes)

Protein efficiency ratio
J 18: 85, **21**: 1489 (of fish protein concentrates, liver & viscera meals)

Protein factor in animal feeds (*see* B_{12} *under* Vitamin B group)

Protein fractions (*see also* Acids, amino; Actin; Actomyosin; Composition, chemical; Myosin; Proteins; Tropomyosin)
C 6: 1 (haddock muscle)
J 7: 585 (extraction), 594 (colorimetric estimation), 599 (denaturation by freezing); **8**: 325 (albumin fraction); **12**: 75 (electrophoretic separation of cod), 646 (albumin fractions of sturgeon); **18**: 483, 495, 893 (albumin, etc. of various Atl. fishes), 637 (of Pac. salmon muscle); **19**: 591 (of cod & haddock muscle)
PRP 20: 14 (in pilchard reduction effluent); **69**: 66 (in enzyme-hydrolyzed flesh & processing wastes); **75**: 43 (peptones for bacteriological media); **104**: 16 (in belly-burned iced Pac. salmon)
S 517 (review); **537, 539** (changes in spawning migratory sockeye salmon); **695** (Pac. salmons & lingcod myogens); **780** (muscle albumins electrophoresis)

Protein hydrolysate (*see* Hydrolysate)

Proteins (*see also* Acids, amino; Actin; Actomyosin; Browning; Composition, chemical; Denaturation; Drip; Flesh; Meals; Muscle; Myosin; Nutritive value; Protein concentrate; Protein fractions; Tropomyosin; *also* other cognate subjects, including names of organisms) (Items designated by "No." represent a series of 18 publications on "Proteins in Fish Muscle" dealing principally with Atl. cod)
C 1921: 125 (lobster muscle); **4**: 325, **6**: 1 (haddock muscle); **8**: 311 (denaturation by freezing), 531 (plastic from)
J 3: 177 (pilchard stickwater); **4**: 412 (breakdown in cod muscle juice); **7**: 35 (biological value: lingcod, lemon sole, Pac. salmon & halibut), 51 (sulphur-containing in muscle), 585 (No. 1–extraction of fractions), 594 (No. 2–colorimetric estimation), 599 (No. 3–freezing denaturation of myosin); **8**: 74 (browning by heat), 325 (No. 4–salt denaturation); **9**: 129 (cod liver vitamin B_{12}), 390 (cod muscle water transfer); **12**: 75 (No. 5–electrophoretic studies of cod muscle), 646 (No. 6–sturgeon albumin); **13**: 129 (No. 7–stored frozen plaice fillets), 156 (of jellied vs. normal plaice), 569 (No. 8–stored frozen redfish fillets); **14**: 627, 925 (No. 9, 10–effect of temperatures fluctuations on frozen cod); **15**: 135 (No. 11–myosin extraction by potassium iodide), 698 (% in redfish fillet flesh); **16**: 21 (odours from bacterial action), 33 (No. 12–ultacentrifuge separation of post-rigor extracts), 43 (No. 13–lipid hydrolysis), 53 (No.

14–tropomyosin of cod), 63 (extraction of water-soluble), 235 (of spawning migratory sockeye salmon; correction on page 930), 243 (No. 15–potassium iodide for cod muscle actin separation), 679 (seasonal variation in amount in Pac. herring), 747 (proteolysis in cod); **17**: 113, 125 (amounts in organs & blood plasma of maturing sockeye; correction on page 943), 323 (amounts in tissues & organs of maturing coho salmon), 371 (lingcod muscle phosphoproteins); **18**: 85, **21**: 1489 (& protein efficiency ratios of protein concentrates, liver & viscera meals), 93, 113 (% & nutritive value in liquefied herring animal feeds), 483 (% in halibut), 495 (% in mackerel, tuna & swordfish), 637 (of Pac. salmon muscle), 893 (% in various Atl. fishes), 1001 (% in marine phytoplankters); **19**: 591 (No. 17–fractionation with zinc acetate); **20**: 187 (frozen lingcod muscle denaturation & nucleotides), 909 (distribution & variation in cod fillets); **21**: 101, 539 (effect of polyphosphate on frozen cod), 239 (patterns of sea lamprey serum), 703 (seasonal variations in cod muscle)

B 125: 143 (determination of total protein in marine phytoplankters)

PRA 73: 9 (hydrolysate from fish skins)

PRP 14: 3 (effects of freezing); **20**: 14 (sub-proteins in pilchard reduction effluent); **55**: 13 (concentration in freezing of clam nectar); **61**: 13 (human allergy to marine); **63**: 46 (biological values); **69**: 66, **71**: 5, **73**: 50, **77**: 97 (amino acid composition of various); **69**: 66 (nitrogen composition of hydrolyzed flesh & processing wastes); **73**: 43 (peptones from, for bacteriological media); **104**: 16 (losses on holding fish in refrigerated seawater)

CVI 3 (in canned B.C. shellfishes); **9** (in freshwater fishes & their parts); **11, 17** (essential amino acids of, in various products)

CVG 24 (nutritional significance in herring meals)

NSB 11: 11 (of Nfld. fish meal)

S 299 (of by-products); **335** (separation of cobalamines); **351** (browning by heat); **517** (review); **633** (No. 16–adenosinetriphosphatase activity of fractions); **695, 696** (of Pac. salmons & lingcod); **780, 822** (by electrophoresis); **801** (No. 18–myosin-B sedimentation patterns of pre-rigor cod muscle); **816** (in primary production)

SS 286 (autolysis & bacterial effect); **287, 1322** (proteolytic enzymes); **426, 1019** (denaturation); **619** (precipitation test for differentiating cod from haddock); **1287** (freezing effects)

Protocapitella

SS 420 (new polychaete genus)

Protoplasm

S 549, 550 (structures in dinoflagellates)

SS 18 (re ocean paleochemistry); **69** (surface tension of, re salts in)

Protothaca staminea (*see* Clam, littleneck)

Protozoa (*see also* classifications of; *also* Shellfish occasional toxicity)

C 1911–14(I): 25, **1914–15**: 83 (parasitic Myxosporidia); **2**: 507 (new B.C. species)

J 11: 673 (parasitic Myxosporidia of B.C. freshwater fishes); **19**: 515 (parasitic trichodinids on lingcod fillets)

PRP 11: 24, **49**: 10 (*Noctiluca*); **105**: 11 (myxosporidian causing "milky" flesh in lingcod)

NRB 5 (*Ceratium*); **16**: 140 (in Nfld. capelin)

S 76 (B.C.); **108** (*Ichthyophonous* in winter flounder); **111** (parasitic Myxosporidia); **149** (*Orchitophyra* in starfish); **648** (re Atl. oyster disease)

SS 148 (parasitic, of Georgian Bay fishes); **166** (*Noctiluca* migrations); **186** Gulf of St. Lawrence region); **280** (parasitic in *Chiridota*); **386, 391, 413, 443, 465, 467** (of B.C. mountain areas & small lakes); **464, 516** (Alaskan freshwater); **668** (*Labyrinthula* on eel-grass)

Prouse, Marjorie Eleanor

CJG 4, 5 (Nfld. groundfish investigations & landings, 1956–57)

SS 1184, 1212 (cod & haddock length frequencies)

Prowfish (*Zaprora silenus*)
B 68: 198, **68R**: 233 (full description)
PRP 41: 22 (occurrence of specimen)
SS 320 (occurrence of specimen)

Proximate analysis (*see* Composition, chemical; Nutritive value; *also* Lipids; Mineral constituents; Oils and fats; Proteins; *also* names of organisms)

Pruter, Alonzo Theodore
J 15: 625 (ocean climates re fish yields)

Psettichthys melanostictus (*see* Sole, sand)

Pseudacris nigrita septentrionalis (*see* Frogs)

Pseudocalanus (*see Calanus*)

Pseudocra crassidens (*see* Whale, false killer)

Pseudomonas (*see also* Bacteria, general; Bacteria, spoilage)
J 12: 337 (in haddock spoilage); **13**: 183, 195 (causing hydroxylamine oxidation); **14**: 617, 775, **16**: 13, 21 (identification & cause of odour production in fish spoilage; correction on **14**: 998)
PRP 5: 7, **6**: 3, **9**: 19 (re halibut skin yellowing); **96**: 11 (indigenous on fish: growth, culture, nutritional requirements)
S 772 (*P. fragi* oxidation of glucose & ribose)

Pseudopentaceros richardsoni (*see* Boarfish)

Pseudopleuronectes americanus (*see* Flounder, winter)

Pseudopleuronectes dignabilis (*see* Sole, lemon (Atlantic))

Psychichthys affinis (*see* Chimera, deepwater)

Psychrolutes paradoxus (*see* Sculpin, tadpole)

Pterolamiops longimanus (*see* Shark, whitetip)

Pteropoda
C 1917–18: 248 (Canadian)
J 5: 23 (Canadian Atl.); **11**: 244 (Strait of Belle Isle); **19**: 271 (NE Pac. distribution)
S 616 (NE Pac.)

Ptilichthys goodei (*see* Quillfish)

Ptychocheilus oregonense (*see* Squawfish, northern)

Publication lists (The present List of Publications and Index includes essentially all the items in the following lists, plus many more items. *See also* the entry Bibliographies)
C 1921: 167 (from Board Biological Stations, 1901–1921)
B 28 (from Board stations, 1922–1930); **87** (Board publications, 1901–1949); **110** (Board publications & index, 1901–1954)
PRA 73: 21 (Atlantic Progress Reports and index, Nos. 1–73)
PRP 23: 7 (re fish oils & vitamins, from Board stations); **24**: 11 (re fishery products other than oils, from Board stations); **60**: 3 (Pacific Progress Reports and index, Nos. 1–60); **80**: 60 (*ibid.*, Nos. 61–80); **100**: 20 (*ibid.*, Nos. 81–100); **114**: 23 (*ibid.*, Nos. 101–114)
CCG 3: 24, **4**: 29, **5**: 44, **6**: 24 (freshwater fisheries)
CHN 19 (Board publications on fisheries by-products, principally oils & meals, 1950–63)
CNG 47 (Board Circulars & Industrial Memoranda, with index, 1935–1957); **58** (Board publications, 1955–1960)
CVG 22 (smoking & smoked fish products)
CSG 32, 41 (articles for Atl. oyster farmers)
SS 336 (Canadian Pac. biological, 1922–1929); **707** (B.C. oceanography)
[Board Manuscript Report No. 660 on History of the Board (1900–1924) contains various lists of Board & related publications issued during that period. Lists of publications for the year are given in the printed Annual Reports.]

Puddling
S 301 (as feeding habit of Atl. herring gull)

Puff-belly (*see* Sea raven, Atlantic)

Puffer, northern (*Sphoeroides maculatus*) balloonfish; swellfish)

J 16: 513 (N.S. record of skeleton); **17:** 733 (N.B. record)

B 155: 415 (full description)

Puffer, oceanic (*Lagocephalus lagocephalus*)

J 19: 811 (Nfld. record); **20:** 253 (distribution)

B 155: 414 (full description)

Pugsley, Leonard Irving

J 4: 312, 396, 405, 472 (liver & intestine oil vitamins of B.C. dogfish, halibut & cods); **5:** 344 (B.C. canned shellfish proximate analyses), 428 (vitamins in pilchard, herring, salmon & tullibee oils)

B 59: 97 (marine animal fats metabolism)

PRP 31: 3, 8, **34:** 3, **35:** 7, 12, 13, **36:** 22, **38:** 7, 15, **39:** 3 (body, liver & intestine oils of various B.C. fishes, re vitamins A & D); **33:** 13 (halibut muscle juice biochemistry); **36:** 10 (hair seal & sea lion oils); **40:** 11 (B.C. clam & mussel occasional toxicity)

CVI 3 (shellfish analyses); **4** (pilchard oil vitamins)

SS 659 (halibut & sablefish vitamins A & D); **685** (oil & vitamin A content of lean tissue); **686** (vitamins as fishery by-products)

Pulp-mill effluents as water pollutants (*see* Pollution)

Pump

PRC 2: 5 (for transfer of smelt from net to vessel holding tank), 27 (for lampricide application)

PRP 114: 7 (for unloading fish)

CVG 21 (herring solubles pumpability); **28** (for unloading fish); **29** (air-lift, for unloading fish)

SS 1355 (for unloading fish)

Pumpkinseed (*Lepomis gibbosus*) (*Eupomotis gibbosus*; sunfish)

C 1911–14(II): 40 (Lake Huron); **3:** 148 (SW Ont.); **5:** 457 (Chamcook lakes, N.B.)

J 8: 421 (N.B. lakes); **10:** 196 (upper temperature limit); **11:** 702 (parasites, B.C.); **12:** 447 (population estimate); **14:** 654 (B.C. distribution); **16:** 147 (associations in Ont. streams)

S 144: 71 (Christina L., B.C.); **481** (Man.)

SS 1208: 153 (full description, B.C.)

Pungitius pungitius (*see* Stickleback, ninespine)

Punjamapiron, Somsee

J 18: 641 (cod muscle rigor processes re temperature)

Purines; Pyrimidines; and their bases

J 14: 44 (in soils, freshwater sediments & lake waters); **18:** 349 (from nucleic acids by salmon enzymes); **20:** 1 (complex in cod parasite *Phocanema*)

S 818 (traced incorporation into salmon milt deoxyribonucleic acid); **849** (traced synthesis into ribomononucleotides by salmon milt extract)

SS 1306, 1307 (adenosine & uridine phosphates preparation)

Purpura clavigera (*see* Drill, Japanese oyster)

"Putty" condition of fish flesh

PRA 23: 10, **31:** 3 (in cod & hake)

CHO 36 (cause & prevention)

Pycha, Richard Lawrence

J 19: 1085 (lake trout nylon vs. cotton gillnets)

Pycnogonida (Pantopoda) (sea spiders)

C 1917–18: 254 (E Canadian)

J 5: 459 (Canadian Atl. coast new records); **20:** 1315 (arctic)

AF 10n (Canadian Atl. coast)

S 126 (B.C. coast); **587** (Minas Basin, N.S.)

SS 55 (new *Nymphon*)

Pycnopodia (*see* Starfishes)

Pyloric caeca (*see* Caeca, pyloric)

Pyramid of numbers

J 12: 543 (in lakes)

Pyrimidines (*see* Purines)

Q

Qadri, Sami Ullah
J 16: 903 (cutthroat trout subspecies, B.C.)

Quahaug (*Venus mercenaria*) (*Mercenaria mercenaria*)
C 1906–10: 220 (P.E.I. fishery; effect on oyster beds), 237 (recognition of larvae); **1914–15**: 73 (effect of disease on N.B. fishery)
J 7: 545 (eel-grass effect on growth)
B 77: 18 (Malpeque Bay larvae, P.E.I.); **128** (mechanical harvester)
PRA 30: 3 (growth rate); **32**: 8 (Northumberland Strait survey); **71**: 21 (resource & future prospects)
CFI 24 (canning)
CHO 32 (canning)
CNG 64: 25 (productive capacity)
SS 657 (growth indices variations)

Quahaug, ocean (*Arctica islandica*) (*Cyprina islandica*)
B 102 (illustration)
PRP 71: 21 (possible commercial development)
CHN 64: 25 (productive capacity)

Qualicum River, B.C.
PRP 113: 16 (flood damage to bed)

Quality of products: freshness and/or spoilage (*see also* Quality tests) *Results of tests* of preservative substances or procedures will mainly be found under headings such as Antibiotics; Antioxidants; Bacteria, suppression of; Canning; Chilling; Dehydration; Drying; Freezing; Glazes; Ice for fishery products; Icing; Irradiation; Preservatives; Refrigeration; Salting; Sanitation; Sea water, refrigerated; Smoking; Taste tests; further collected information on *types and causes of quality deterioration* will be found under headings such as Bacteria in handling, processing and spoilage; "Bilgy" odour; Browning; "Chalkiness"; Denaturation; Discoloration; Drip; "Dun"; Enzymes; Fillets; Flesh; Grading; Hydrogen sulphide; Hydrolysis; Inspection for quality; "Jellied" condition; "Milky" condition; Muscle; Odour in quality assessment; Palatability; Parasites; *Phocanema*; Rancidity; "Reddening"; Shellfish occasional toxicity; *Triaenophorus*; Trimethylamine. *See also* entries under products of some of the more important commercial fishes.)
C 1917–18: 175, **1918–20**: 99, **3**: 347, **4**: 227, 257, 317, **5**: 431, **7**: 147, **8**: 301 (haddock); **1917–18**: 181, **1918–20**: 103 (swelled canned sardines); **1918–20**: 99, **8**: 275 (some Atl. fishes putrefaction rate); **1921**: 1, **4**: 95, 227 (Atl. clam); **1**: 279 (Atl. herring "rustiness"), 297 (frozen Atl. hake), 401 (Atl. dogfish); **2**: 1, **4**: 227, **5**: 93 (lobster); **7**: 139, 245 (Pac. halibut); **8**: 301 (Atl. cod)
J 3: 70, 439, **4**: 136, **5**: 249, 276, 287, 438, **6**: 1, 10, 17 (a numbered series of 10 studies on quality of salt fish); **3**: 77, **4**: 63, 229, 252, 267, 412, **5**: 32, 197, 203 (a numbered series of 9 studies on spoilage of Maritime fishes); **4**: 355, **5**: 121 (*p*H re bacterial spoilage); **5**: 411, **21**: 1397 (drip); **6**: 45, 53, 403, **7**: 370, 378, 430, 528, 536, 580, **8**: 111, **9**: 148, **13**: 559, **21**: 423 (studies on spoilage of Atl. cod); **6**: 119 (B.C. salmon & halibut), 303 (dehydrated fish); **7**: 116 (corrosion in canned Atl. herring), 449 (Atl. cod fillets palatability changes); **12**: 329, **13**: 21, 207, 291, 861, **16**: 223, **18**: 295 (a numbered series of 7 studies on spoilage of cod & haddock in fishing vessels at sea); **13**: 47 (frozen Atl. oysters), 129 (frozen plaice fillets), 569 (redfish fillets), 869 (cod & haddock viscera); **14**: 617, 775, **16**: 13, 21 (a numbered series of 4 studies on bacterial odour production in cod & haddock fillets); correction on **14**: 998); **14**: 627, 925 (frozen Atl. cod), 637 (frozen lobster meat); **15**: 517, **18**: 295 (round vs. gutted haddock); **16**: 43, 755, **18**: 143, **19**: 169, **21**: 1397 (fat hydrolysis); **16**: 747 (proteolysis in cod); **17**: 1, **21**: 577 (cooking time & temperature effects on palatability of cod fillets re quality); **18**: 85 (protein concentrate; liver meal; viscera meal), 147 (dried Cambodian fish), 833, 845, 851 (salt cod); **20**: 1153 (porbeagle flesh), 1183 (frozen tuna); **21**: 813 (scallops after irradiation), 827 (haddock fillets after irradiation)
B 8 (canned lobster); **12, 29, 49** (Pac. halibut yellow discoloration); **20**: 11 (haddock); **37, 59, 89** (marine animal oils; *see*

their indexes); **76** (whitefish quality control); **100** (spoilage problems in Atl. fishes); **103**: 2 (control of spoilage on fishing vessels); **112**: 26 (cured cod & haddock); **126**: 29, 33 (fish stowed in refrigerated seawater); **138** (re antibiotic dips for fillets)

PRC 1: 28 (canned freshwater smelts)

PRA 1: 5, **12**: 7, **14**: 14, **45**: 3 (scallops); **2**: 7, 12, **5**: 10, **10**: 6, **44**: 8, **45**: 11, **46**: 3, **66**: 9, **71**: 17, **73**: 17 (chilling or refrigeration effects); **6**: 3, **21**: 16, **31**: 3, **36**: 3, **37**: 3, **38**: 10, **40**: 3, **46**: 6, **55**: 14, 17, 24, **59**: 15, 18, 22, **62**: 32 (care of fish in vessel hold); **6**: 12, **22**: 7 (halibut discoloration); **9**: 7 (stored canned lobster discoloration); **23**: 6, **38**: 10 (general causes & effects of spoilage); **23**: 8 (canned clams), 10, **31**: 3 ("putty" condition of hake & cod flesh); **24**: 3, **26**: 3 (effect of fillet *p*H); **28**: 17, **71**: 13 (mould on salt fish); **32**: 5, **68**: 17 (stored cod livers); **36**: 19 (smoked fillets); **38**: 10, **39**: 3, **41**: 10, **56**: 10, **59**: 17, **70**: 23 (freshly cut fillets); **40**: 7, 9, **66**: 13 (effects of chlorinated water & disinfectants for processing plants); **41**: 4 (stored cod fillets palatability changes); **44**: 3 (bacterial food poisoning); **45**: 14, **60**: 3 (yellow stains on salt fish); **51**: 3, 7, **60**: 9 (fish quality in Ont. retail stores); **55**: 3 (salt fish "sliming"); **56**: 5, 10 (effect of slime on sanitation); **56**: 17, **71**: 3 (various salt cod products); **59**: 3 (bruised American plaice); **61**: 12 (vinegar-cured herring); **71**: 17, **72**: 37 (fat hydrolysis in frozen cod)

PRP 3: 3, **5**: 7, **14**: 12, **15**: 11, **17**: 5, **18**: 7, **27**: 11, **32**: 9, **42**: 16, **44**: 12, **45**: 19, **47**: 5, **48**: 19, **49**: 3, **50**: 16, **95**: 39 [correction on **96**: 10], **114**: 19 (freezing & cold storage effects); **6**: 5, **7**: 3, **27**: 11 (Pac. halibut yellowing); **11**: 14, **22**: 14 (bacterial growth rapidity re spoilage); **13**: 3 (salt herring); **15**: 5, **18**: 5 (salmon oil hydrolysis); **20**: 9 (re care on fishing vessel); **21**: 10, **104**: 7 (curd in canned salmon); **23**: 14 (beef liver for hatchery feed); **33**: 13, 17, 23, **37**: 12, **44**: 12, **47**: 4, **88**: 57, **92**: 21 (fresh, iced & frozen halibut); **37**: 7, **40**: 14 (lightly smoked B.C. fish keepability); **38**: 3 (fillets after ultraviolet light treatment); **43**: 3, **74**: 3, **89**: 82, **98**: 23 (shrimp); **52**: 19, 24 (volatile bases formation before or during canning); **54**: 15, **76**: 63, **77**: 116 (vitamin A stability in oils); **57**: 16 (dehydrated fish); **59**: 15 (B.C. flounders & cods); **63**: 27 (home-canned salmon); **66**: 9 (kippered herring); **71**: 15 (general); **77**: 106 (overheated fish meal); **81**: 80 (effect of mechanically washing fish re fillet quality); **87**: 34, **95**: 57, **106**: 6 (Dungeness crab); **89**: 76 (re refrigerated display cabinet); **96**: 20 (gray cod unusual odour); **99**: 22 (mould inhibition in salt lingcod); **100**: 15 (fading of salmon colour during canning); **101**: 6, 10, **105**: 27 (herring stickwater spoilage); **102**: 4 (re gut bacteria of living rock cod); **104**: 22, **105**: 6, **109**: 14 (whale carcass flesh); **105**: 12 (shucked oysters); **106**: 8 (food-poisoning bacteria); **110**: 13 (dogfish flesh)

CHO 15, 23 (canned lobster); **36** ("putty" flesh condition)

CHN 1 (quality deterioration in vessels at sea); **3** (frozen lobster meat discoloration); **8** (non-bacterial spoilage); **14** (botulism)

COF 15 (Atl. oysters when fished too early)

CSG 6 (green-gilled Atl. oysters)

CVI 16 (processing effects on quality & nutritive value); **20** (holding whale carcasses); **23, 31** (packaged frozen fish); **25** (stored herring meal); **33** ("chalky" halibut flesh)

MSP 3 (general); **4, 5** (canned B.C. salmon)

NSB 4 ("pink" fish); **12** (general)

S 89 (Pac. halibut skin discoloration); **96, 102, 114** (autolysis re bacteria, etc.); **277, 279** (green-gilled Atl. oysters, mussels & clams); **309, 324, 510B, 524, 566, 595, 615, 675, 725, 741, 781, 867** (general effects of freezing & frozen storage); **332, 672** (recent advances in maintaining quality); **370** (post-mortem deterioration in fish); **388** (re bacteria nutritive requirements); **403** (care of fish in fishing vessel holds); **407, 408** (decomposition of hot stickwater); **417** (mould inhibition); **455**

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

(sardines for canning); **468, 524**: 7, **718** (antibiotic residues in cooked fish); **504** (predicting colour of canned sockeye salmon); **523** (phosphate crystals on salt fish); **532, 540, 685** (fresh fillets packaging); **565** (seaweedy odours in cod & haddock); **579** (stored live oysters); **641** (cold-stored herring meal); **672, 719** (effect of gamma radiation); **741** (frozen fish quality at consumer level); **742** (various processing problems re quality); **781** (stored refrozen cod fillets)

SS 158, 159, 309, 339, 426, 481, 527, 553, 586, 632, 691, 692, 710, 874, 950, 996, 997, 1019, 1066, 1122, 1140, 1237, 1287, 1372, 1406 (general effects of freezing & frozen storage); **160, 206** (swelled canned sardines); **168** (early spoilage of eviscerated fish with gills); **229** (reddening of cured cod); **249, 259** (canned lobster); **276, 286, 298, 737, 751** (early chemical changes in fish muscle); **281, 709** (bacteria re canning); **287, 1322** (proteolytic decomposition); **292** (reason for tenderness of fish flesh); **301** (haddock); **321, 450, 873, 1132, 1150** (processing problems); **341, 959** (temperature effect on fish meal); **342** (fish meal from fresh vs. putrid materials); **360, 396, 445, 473, 474, 525, 526, 527, 691, 846, 910, 996, 997, 1015, 1034, 1122, 1403, 1406** (care of fish on fishing vessel & in hold); **454, 581** (re marketing B.C. halibut); **642, 845, 878, 951** (fish storage & transport); **718** (smoked products); **764** (hibernating oysters); **755** (freezing & thawing effects on B.C. canned herring); **846** (role of slime); **876** (trimethylamine & its effects on spoilage); **879** (spoilage-causing bacteria types); **934, 1015** (re packaging); **989** (Gaspé-cure cod); **1010** (Japanese halibut suspected of radioactive contamination); **1041** (parasitism in fish re acceptability for food); **1194** (air-shipped live lobsters); **1265, 1346, 1374** (processing effects on quality); **1272** (amino acids re fish flavour); **1412** (quality of food additive ingredients for fish products)

Quality tests of products for freshness and/or spoilage (*see also* Acids, fatty; Acids, volatile; Ammonia; Bases, volatile; Grading; Hydrogen sulphide; Inspection for quality; Odour in quality assessment; Quality of products; Trimethylamine)

J 3: 77 (volatile base production in Atl. cod); **4**: 162 (B.C. canned salmon firmness); **5**: 197 (volatile acids); **6**: 53 (surface contamination concept), 351, **7**: 576, **16**: 1, 223, 555, 747, 791 (trimethylamine); **8**: 309 (trimethylamine oxide); **12**: 333 (haddock freshness); **13**: 559 (tyrosine value for cod fillets), 863 (hydrogen sulphide); **15**: 701, 717, 729, **18**: 303 (a numbered series of 4 studies on grading Atl. cod & haddock for quality); **17**: 475 (iced shrimp); **18**: 851 (ammonia; free amino acids); **19**: 615 (effects of antibiotics on tests); **21**: 1345, 1361 (rancidity in lean fish muscle), 1397 (Nfld. trap-caught cod)

B 59, 89 (for marine animal oils; *see* their indexes)

PRA 15: 4 (ammonia); **20**: 3, **27**:10, **30**: 10, **34**: 4, **67**: 23 (trimethylamine); **27**: 10 (various); **51**: 11 (for "dun" contamination of salt fish); **65**: 17 (smelt grading difficulties)

PRP 28: 14, **29**: 12, **30**: 11, **32**: 4, **33**: 20 (a series on testing B.C. commercial canned salmon for respectively: firmness; colour; free oil; vacuum; free aqueous liquor); **49**: 8, **59**: 15, **62**: 7 (direct counts of bacteria); **59**: 15 (B.C. flounders & cods); **62**: 7 (carbon dioxide in Pac. herring flesh); **78**: 11 (flesh *p*H); **102**: 22 (volatile reducing substances in fresh & canned salmon)

CHN 4 (trimethylamine)

COF 13, 19 (oysters)

S 575 (trimethylamine); **661** (review of objective quality tests)

SS 142 (B.C. salmon grading); **619** (differentiation of haddock from cod fillets); **693** (estimating decomposition); **772** (surface proteins solubility changes); **875** (objective tests); **882** (subjective tests); **1235** (volatile acids & bases)

Quamichan Lake, B.C.

PRP 65: 70 (sudden fish mortality)

Qu'Appelle River drainage system, Sask.

J 20: 1397 (bigmouth buffalo life history & ecology)

Quatsino Sound, B.C.

J 20: 1109 (oceanography of inlets off)

B 26 (salmon tagging & returns)

Quatsino Weatherstation, B.C. (*see also* Kains Island)
PRP 31: 16, **33**: 11 (significance of sea temperatures & salinities)

Quayle, Daniel Branch
J 4: 53 (new clam species, Vancouver Is.); **6**: 140 (littleneck clam sex & gonads); **8**: 369 (butter clam harvesting frequency vs. productivity); **21**: 1155 (B.C. mollusca)
PRP 39: 19 (B.C. clam problem); **40**: 8 (oyster larvae distribution); **43**: 8 (Japanese oyster propagation in B.C.); **46**: 6 (B.C. clams identification); **48**: 17 (Japanese littleneck clam in B.C.); **50**: 21 (B.C. clam enemies); **51**: 20 (dynamite for shipworm control); **69**: 63 (butter clam digging frequency); **102**: 20 (Pac. oyster propagation in B.C.); **105**: 3 (shipworm growth); **107**: 7 (raft culture of Pac. oyster); **114**: 9 (B.C. abalone)
S 238 (B.C. clam investigation); **245** (B.C. edible molluscs); **580** (B.C. oyster setting prediction); **581** (Pac. oyster seed production); **602, 603** (shipworm development & growth rate); **740** (Pac. razor clam); **813** (Pac. oyster seed mortality); **844** (marine molluscan deoxyribonucleic acids)
SS 885, 909, 1200 (B.C. fishery wealth); **893** (clam movements); **1262** (B.C. intertidal bivalves); **1416** (B.C. marine borers)

Quebec Province (*see also* individual localities and bodies of water, e.g. Belle Isle, Strait of; Hudson Bay; St. Lawrence, Gulf of; Ungava Bay; *also* names of regional fishes and other organisms)
C 1906–10: 45 (Gaspé coast fauna); **3**: 235 (pike-perch parasites)
J 12: 754 (sea sturgeon taxonomy); **13**: 799 (trout fecundity)
B 155 (marine fishes)

Queen Charlotte Islands, B.C. (*see also* McClinton Creek)
C 1914–15: 35 (kelp survey)
J 1: 503 (hydroids); **14**: 165 (copepod distribution in region); **15**: 1103 (chum salmon production)
B 40: 3 (coho salmon tagging); **41**: 4 (chinook salmon tagging); **65**: 4 (chinook & coho feed); **91**: 1 (Graham Is. Dungeness crab); **113** (chinook & coho tagging)
PRP 76: 81 (Dungeness crab fishing); **80**: 57 (herring spawning); **89**: 84 (Graham Is. Dungeness crab tagging); **96**: 22 (pink salmon cycle); **99**: 3 (Dungeness crab feed); **107**: 22 (Dungeness crab larvae abundance); **109**: 16 (Dungeness crab tagging)
S 147 (hydroids)
SS 708 (reptant decapods)

Queen Charlotte Sound, B.C. (*see also* Oceanography, Pacific)
C 1914–15: 32 (kelp survey)
J 14: 945 (wind effects on inshore waters); **18**: 311 (temperature & salinity of surface waters)
PRP 26: 5, **31**: 16 (sea temperatures & salinities); **101**: 20, **103**: 20 (re Hecate oceanographic project)
S 586 (water structure & currents)

Queen Charlotte Strait, B.C. (*see also* Oceanography, Pacific)
PRP 100: 6, **105**: 14 (oceanography); **106**: 24 (young salmon distribution); **107**: 27 (salmon tagging)

Queen Elizabeth Islands (*see* Arctic, Canadian; *also* names of specific islands and localities)

Quicklime
PRA 27: 13 (effect on other organisms when used for destroying starfish on oyster beds)
COF 11 (for killing starfish)

Quigley, John Paul
S 58 (dogfish reactions to varying salinity)
SS 330 (dogfish life history & physiology)

Quill Lakes, Sask.
C 1921: 155 (diatoms); **1**: 125 (fishery possibilities), 305 (free-living copepods)
[Board Manuscript Report No. 660: 261 gives history of Board investigations of these lakes]

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Quillback (*Carpiodes cyprinus*) (quillback carpsucker; quillback sucker)
S 481 (Man.)
SS 838 (Sask. occurrences)

Quillfish (*Ptilichthys goodei*)
B 68: 189, **68R**: 367 (full description)
S 290 (second B.C. record)

Quinte, Bay of, Ont. (*see also* Ontario, Lake)
C 6: 165 (whitefish spawning & life history)
J 13: 547 (fry planting effect on whitefish)

Quoddy Region (*see* Fundy, Bay of; Oceanography, Atlantic (NW coastal waters); Passamaquoddy Bay)

Quota (*see also* Management)
PRP 51: 7, **54**: 14 (butter clam digging)
S 527 (sociological effects of); **535** (principles involved in)
SS 923 (B.C. herring); **1029** (Great Slave L. fishery)

R

Rabb, Laurence Frederick
J 19: 989 (furunculosis in Ont. fishes)

Rabbit, albino
C 2: 115 (for testing insulin from fishes)
S 17 (for testing insulin from fishes)
SS 653 (for testing hypoglycaemic effect of devil's club root extract)

Race Rocks Lightstation, B.C. (*see also* Juan de Fuca Strait; Oceanography, Pacific (NE coastal waters))
PRP 81: 76, **90**: 16, **98**: 6 (oceanographic data collection)

Races of fish (*see also* Taxonomy and systematics)
J 15: 275 (capelin); **16**: 515 (vernal & hiemal; correction on **16**: 930), 903 (*Salmo clarkii clarkii* re *S. c. lewisii*); **17**: 739 (seasonal, of steelhead trout); **21**: 691 (Pac. sardine)
PRA 14: 3 (haddock)

Rachochilus vacca (*see* Seaperch, pile)

Radcliffe, Roland Wooton
J 8: 67 (fin-clipping effect on swimming speed)

Radiation (*see* Heat budget and exchange; Irradiation; Isotopes; Light; Photosynthesis; *also* similar cognate subjects)

Radioactivity (*see* Isotopes; Tagging)

Radiography (*see* X-rays)

Radiolaria
C 1917–18: 229 (Canadian Atl., checklist & index); **7**: 213 (new B.C. species)
PF 1d (descriptions of B.C.)
S 76: 12, 17 (B.C.)

Radiometer (*see also* Illumination)
CPO 1963-2, 1964-6 (airborne for oceanography)
S 778 (thermopile)

Radulinus asprellus (*see* Sculpin, slim)

Radulinus taylori (*see* Sculpin, spinynose)

Raft culture (*see* Oyster, Atlantic; Oyster, Pacific)

Ragfish (*Icosteus egnigmaticus*) (*Acrotus willoughbyi*; fan-tailed or brown ragfish)
B 68: 332, **68R**: 234 (full description)
PRP 83: 27 (common as whale feed)
S 851: 57 (possible B.C. resource)
SS 345 (Queen Charlotte Is.)

Railway transportation, refrigerated (*see also* Transportation of fishery products)
J 14: 627, 925 (simulated, for cartoned frozen fish)
PRA 43: 13 (icing); **45**: 11 (re shipping fillets)
PRP 17: 13, **19**: 17, **29**: 3 (roof tanks with ice & salt); **21**: 13 (combatting odours); **34**: 18 (roof tanks with ice & salt vs. "dry ice"); **62**: 17 (roof tanks with frozen eutectic); **74**: 23 (roof tanks with ice, salt & ammonium nitrate); **77**: 100, **78**: 21, **79**: 27, **82**: 11, **86**: 21 (with mechanical refrigerator units)
S 323 (mechanical refrigeration)
SS 723 (end tanks vs. overhead tanks); **866** (overhead tank)

Rain (*see* Dilution effect; Flow; Storms; Weather)

Rainbow trout (*see* Trout, Kamloops; Trout, rainbow; Trout, steelhead)

Raja abyssicola (*see* Skate, deepsea)

Raja bathyphila (*see* Skate, abyssal)

Raja binoculata (*see* Skate, big)

Raja diaphanes, R. ocellata (*see* Skate, winter)

Raja eglanteria (*see* Skate, clearnose)

Raja erinacea (*see* Skate, little)

Raja fyllae (*see* Skate, round)

Raja granulata (*see* Skate, deep water)

Raja hyperborea (*see* Skate, arctic)

Raja jenseni (*see* Skate, Jensen's)

Raja kincaidi (*see* Skate, black)

Raja laevis, R. stabuliforis (*see* Skate, barndoor)

Raja lintea (*see* Skate, white)

Raja mollis (*see* Skate, soft)

Raja radiata, R. scabrata (*see* Skate, thorny)

Raja rhina (*see* Skate, longnose)

Raja senta (*see* Skate, smooth)

Raja spinicauda (*see* Skate, spinytail)

Raja stellulata (*see* Skate, starry (Pacific))

Rake; Raking
B 60: 56, **131:** 106 (commercial, for Atl. oysters); **115:** 5 (or fork for digging bloodworms)
CSG 10 (for Irish moss)

Raleigh, Robert Franklin
J 21: 477 (theoretical reproduction curves), 485 (sockeye salmon homing)

Ramsay, L. N. E.
SS 98 (NE Pac. Nereidae annelids)

Rana sylvatica cantabrigensis (northern wood frog)
B 94: 24 (Canadian Arctic & Subarctic)

Rancidity (*see also* Antioxidants; Glazes; Lipoxidase; Oxidation; Refrigeration)
J 7: 237 (control); **14:** 641 (of frozen lobster meat); **21:** 1345 (acceleration & evaluation in lean fish muscle), 1361 (anatomical & seasonal variations in cod muscle), 1371 (inhibition by bacteria in cod)
PRP 3: 9 (of oils); **13:** 3 (of salt herring); **20:** 6 (re hydrogenation of oils); **27:** 11 (re "rusting" of halibut); **78:** 11 (re *p*H of flesh); **83:** 35 (nitrite as promoter of, vs. antioxidant effect)
B 59, 89 (causes, effects & control in marine animal oils; *see* their indexes)
CVG 23 (plastic film packaging to avoid)
S 424 (oxidative, in frozen fish); **744** (metal-induced in Atl. groundfish)

Rankin, George Percival
C 4: 107 (Cladocera nutritional physiology)

Rat, albino
J 6: 63 (sodium nitrite effects on), 109 (for testing biological value of fish oil unsaturated acids); **7:** 35 (for testing biological value of fish flesh proteins), 74 (for testing biological value of fish flesh B vitamins); **11:** 58 (for testing salmon pituitary growth hormone); **18:** 85 (for testing fish meal & flour protein values)
PRP 52: 23 (for testing clams for toxicity)
S 864 (retention of dietary fatty acids pattern)

Ratfish (*Hydrolagus colliei*)
B 37: 148, **59, 89** (oils; *see* their indexes); **68:** 71, **68R:** 94 (full description)
PRP 51: 19 (liver oil uses); **58:** 13 (liver oil unsaponifiables); **63:** 43 (liver oil expansion coefficient); **94:** 23 (flesh proximate analysis & urea); **111:** 3 (effect of explosion on)
CNG 35 (taken in shrimp trawls)
CNS 1–11 inclusive, **13** (B.C. trawl landings by areas, 1945–63)
S 13 (pentose in); **47, 53** (brain vascular supply); **58** (reactions to variations in salinity); **81** (creatine in tissues);

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82 (arginase in organs); **290** (W coast Vancouver Is.); **593** (liver oil anti-hypercholesterolemic action)

Rathbun, Mary Jane
AF 10m (Canadian Atl. coast Decapoda)
SS 150 (Pac. coast grapsoid crabs)

Rations (*see* Feed studies; Feedstuffs)

Rattail, common (Atlantic) (*see* Marlinspike)

Rattail, filamented (*Coryphaenoides filifera*) (*Chalinura filifera;* filamented grenadier)
B 68: 135, **68R:** 169 (full description)

Rattail, roughscale (*Coryphaenoides acrolepis*) (*Macrourus acrolepis;* roughscaled grenadier)
B 68: 136, **68R:** 170 (full description)

Rattail, roundnose (*see* Grenadier, rock)

Rattail, smoothscale (*Coryphaenoides cyclolepis*) (*Dolla cyclolepis;* smoothscaled grenadier)
B 68: 134, **68R:** 168 (full description)

Rattail, smooth-spined (*see* Grenadier, roughhead)

Rawson, Douglas Strathearn
J 2: 227 (Prince Albert Park, Sask., lakes studies); **8:** 1, 207, **10:** 486, **13:** 15 (Great Slave L. limnology, fishes, bottom fauna, net plankton); **10:** 224 (lakes plankton standing crop); **18:** 423 (Lac la Ronge, Sask., lake trout)
B 42 (productivity studies, Kamloops lakes, B.C.); **56:** 3 (hydrography, plankton & bottom fauna, Okanagan lakes, B.C.); **72:** 45, 69 (biological survey, Great Slave L. & Lake Athabaska)
S 197 (limnology, Shuswap L., B.C.)
SS 438 (pike of a Sask. lake); **833** (deep-water dredging equipment); **859** (Great Slave L. deep bottom fauna); **894** (Great Slave L. production estimation)
J 18: 479 (obituary of)

Ray (species in general) (*see also* Elasmobranchs; Skates; Stingrays)
B 68R: 29, 91 (key & description of B.C.); **155:** 48 (key & description of Atl.)
PRP 25: 9 (descriptions & key of B.C.)
AF 12e (Canadian Atl. coast)

Ray, devil (*see* Manta, Atlantic)

Ray, electric (Atlantic) (*see* Torpedo, Atlantic)

Ray, Pacific electric (*Torpedo californica*) (*Tetranarce californica*)
B 68: 70, **68R:** 93 (full description)
PRP 25: 9 (description); **47:** 13 (B.C. occurrences)

Ray, rat-tailed sting (*see Stingray, diamond*)

Rays, fin (*see also* Fin; Spines)
B 68R: 20 (counting of)

Raymond, Marcel
J 12: 496 (flora of Chubb Crater, Que.)

Reactions of organisms (*see* Behaviour; Current, reactions to; Drugs; Electricity; Flow; Guiding; Light, reactions to; Odour, reactions to; Oxygen, dissolved; Pollution; Salinity, reactions to; Sound, reactions to; Taste sense in fishes; Temperature, reactions to; *also* other cognate subjects)

Recipes for fish cookery (*see also* Cooking of fishery products; Delicatessen products)
B 20: 53 (frozen fish fillets)
CFI 12 (fish chowder); **16** (spiced tomato sauce); **20** (marinated herring)
CHN 34 (marinated herring)

Records of occurrences of organisms (*see also* Lists; Species, new; *also* under names of individual organisms) (The following is a general listing)
B 68, 68R (B.C. marine fishes); **155** (Canadian Atl. marine fishes)
SS 381, 571 (unusual, N.S.); **440** (B.C. marine fishes); **522** (unusual B.C. fishes); **795** (B.C. marine)

Recovery (*see* Injury; Revival; Wastes recovery)

Recruitment to a fish stock
J 5: 43 (re catch per unit effort; abundance; exploitation rate); **11:** 559 (& stock; correction on **12:** 941); **12:** 187 (winter flounders; correction on **12:** 942), 447 (removal of effects on population estimates; correction on **14:** 997); **13:** 135 (re exploitation); **20:** 257 (effect on fish populations)

B 119 (effect on population estimates; relation to stock size; *see* its index); **139** (in Strait of Georgia trawl fishery)
PRP 98: 17 (re brill availability)
S 873 (re stock in B.C. herring populations)

"Red" on salt fish (*see* "Reddening")

Red devil (*Lyconectes aleutensis*)
B 68: 184, **68R**: 379 (full description)

Red feed (*see* Euphausiacea)

Red snapper (*see* Snapper, red)

"Red snow" (*see* Snow)

"Red tide"; "red water" (dinoflagellate swarms)
PRP 40: 11, **49**: 10, **82**: 3, **112**: 10 (re shellfish toxicity)

"Reddening" (halophilic bacteria discoloration of salt fish)
J 3: 70, **5**: 438 (sources & types of bacteria); **6**: 10, 17 (bacteria growth & inhibition); **9**: 157 (culture media), 377 (bacteria survival in water & brines); **11**: 261 (enumerating bacteria); **13**: 183, 195 (media for differentiating bacteria); **20**: 997 (re cooling of salted fish)
B 9, 112: 31 (re processing salt fish)
PRA 4: 5, **44**: 15, **50**: 9 (avoidance by sterilizing salt); **4**: 5, **6**: 14, **13**: 5, **18**: 7, **44**: 12, **50**: 13 (general studies); **27**: 3, **48**: 8, **52**: 28 (avoidance by disinfecting processing plants); **55**: 7 (storing salt decreases bacteria); **58**: 3 (other bacteria antagonistic to reddening bacteria)
NSB 4 ("pink" discoloration)
SS 229 (general); **648** (bacteria growth-limiting factors)

Redds (*see* Spawning beds)

Redfish (*Sebastes marinus* (*marinus*)) (ocean perch; rosefish) (*see also* Redfish (deep-water); *also* International Commission for the Northwest Atlantic Fisheries)
C 1902–05: 86 (N.S.), 91 (trematode parasites); **1918–20**: 99 (putrefaction rate), 111 (Cape Breton, N.S.)
J 9: 112 (Ungava Bay); **10**: 590 (pyloric caeca enzyme); **11**: 250 (Strait of Belle Isle); **13**: 569 (frozen fillet storage); **14**: 856 (nematode parasites), 899 (Gulf of St. Lawrence); **15**: 695 (pigment in red-fleshed); **16**: 43 (lipid hydrolysis in frozen fillets), 510 (large specimen), 763 (larvae pigmentation); **17**: 9 (incidence of *Sphyrion* on), 235 (feed in Nfld. region); **18**: 893 (proximate composition); **20**: 853 feeding on squid)
B 109, 141 (catches & value in long-lining experiment, Nfld.); **120** (N Atl. distribution & description); **155**: 338 (full description)
PRA 66: 20 (distinction from deep-water type), 23 (fillet quality); **67**: 14 (exploration for), 26 (growth)
CJG 1–11 inclusive (Nfld. investigations & landings, 1953–63)
CNG 64: 13 (productive capacity)
CSS 1, 2, 3, 4, 5, 6 (N.S. landings, 1947–52); **7, 8, 9** (Maritimes landings, 1953–55)
NRS 4: 15 (Nfld. waters)
S 235 (large specimens); **413** (NW Atl. stocks); **497B** (*Sphyrion* parasite); **566** (cold storage life); **715** (incidental catches in surveys); **716** (distribution off Canadian SE coast); **717** (summer surface distribution of larvae); **729** (vertebral numbers); **730** (distribution in E arctic & subarctic); **731** (age & growth-rate discrimination problem); **850** (hooks & trawl-meshes selectivity); **874** (trawl-mesh selectivity); **877** (tagging & release methods)
SS 928 (new fishing grounds); **1195** (growth of young); **1211, 1238, 1289, 1325, 1361** (length frequencies)

Redfish (deep-water) (*Sebastes marinus* (*mentella*)) (*see also* International Commission for the NW Atlantic fisheries; Redfish)
B 120 (distinction from *S. marinus marinus*; distribution); **155**: 338 (full description)
PRA 66: 20 (distinction from *S. m. marinus*)
CJG 4, 5, 6, 7, 11: 25 (both *marinus* & *mentella* in Nfld. waters)

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CNG 64: 13 (productive capacity)
S 731 (age & growth rate determination problem)

Redfish (eastern Atlantic) (*Sebastes viviparus*)
B 120: 56 (distribution re W Atl. redfish)

Redhorse, greater (*Moxostoma valenciennesi*) (*M. rubresque;* freshwater mullet)
PRP 74: 19 (canning); **92**: 23 (ribose content of flesh re browning)
CNG 64: 68 (productive capacity)
CVI 12, 13 (constituents; proximate analysis; vitamin A)
S 481 (non-occurrence in Man.)

Redhorse, northern (*Moxostoma macrolepidotum*) (*M. aureolum;* redfin sucker; redhorse sucker)
C 8: 21 (Hudson Bay)
PRP 75: 35 (smoking of)
CCG 5: 1 (fillet proximate analysis)
S 481 (Man.)
SS 111, 117 (Hudson & James Bays)

Redhorse, silver (*Moxostoma anisurum*)
C 1911–14(II): 15 (Lake Huron)
S 481 (Man.)

Redlich, A.
SS 964 (hormones effect on salmon fry)

Reduction of fish or offal (*see also* Meals; Oils and fats; Solubles, condensed)
C 1918–20: 125 (elasmobranchs)
B 35, 36: 19 (pilchard); **37**: 15 (for body & liver oils); **47**: 26 (herring); **59**: 210, **89**: 199 (process for body, liver & viscera oils)
PRP 16: 14, **20**: 14, **114**: 13 (effluent as cause of sea pollution); **20**: 14 (protein & oil losses in effluent); **31**: 7, **38**: 16 (magnetic recovery of pilchard & herring tags); **37**: 19 (efficiency of oil recovery); **76**: 78, **77**: 118, **93**: 18 (small-scale equipment for freshwater fish & offal)
CCG 3: 8 (for Mackenzie R. Delta fish)
NSB 10 (simple equipment for)
S 728 (pilot plant for Mackenzie R. Delta fish)

Reed, Guilford Bevil
C 2: 1 (lobster canning bacteriology & chemistry); **4**: 227 (haddock, lobster & clam spoilage), 257 (haddock intestinal & slime flora); **5**: 103 in part (lobster canning problems)
J 7: 217 (obituary of A. T. Cameron)
B 8 (canned lobster discoloration)
S 96 (bacterial spoilage of autolyzed sterile tissue)
SS 275 (*p*H re biota of granite vs. limestone pools); **286** (early post-mortem fish muscle changes)
J 12: 795 (obituary of)
PRA 61: 3 (obituary of)
PRP 102: 3 (obituary of)

Rees, Edward Ivor Shinner
J 20: 853 (new squid record, NW Atl.), 1513 (batfish off N.S.); **21**: 209 (oceanic eel record in Canadian waters)
S 750 (NW Atl. fulmar distribution); **751** (feed of greater shearwater); **826** (*Melanostigma* eelpout genus revision); **836** (Gulf of St. Lawrence & Belle Isle Strait November marine birds); **877** (redfish tagging)

Refining of marine animal oils (*see also* Oils and fats)
B 59: 256; **89**: 215 (*see also* their indexes)
PRA 29: 11, **34**: 19 (cod liver oil)
PRP 9: 15, **10**: 14, **11**: 5, **25**: 13, **26**: 16, **55**: 16 (pilchard & herring oil); **76**: 63 (dogfish liver oil)

Reflexes (*see also* subjects referred to under the heading Reactions of organisms)
S 51 (spinal, of skate); **100** (scallop adductor mechanism); **207** (of fish out of water)

Refraction, index of
C 7: 530 (re degree of oil hydrogenation)
B 59, 89 (of marine animal oils; *see* their indexes)
PRP 10: 14 (pilchard oil re hydrogenation); **33**: 13, **49**: 3 (of halibut drip re freshness)
S 349 (re saturation of various fatty acids); **645** (continuous-recording differential refractometer)

Refrigerated sea water for fish quality preservation (*see* Sea water, refrigerated)

Refrigerated storage (*see* Refrigeration)

Refrigerated transport (*see* Chilling; Ice; Railway transportation; Sea water, refrigerated; Transportation of fishery products)

Refrigeration and refrigerated products (*see also* Chilling; Cooling; Dehydration; Denaturation; Fillets; Flesh; Frozen fishery products; Glazes; Holds; Icing; Insulation; Railway transportation; Rancidity; Sea water, refrigerated; Thawing; *also* other cognate subjects)

C 1: 279 (pickled herring to delay "rust"); **7:** 495 (jacketed room); **8:** 475 (cold storage room principles)

J 7: 378 (bacteriology re cod fillets); **13:** 47 (frozen Atl. oyster meats), 129 (frozen plaice fillets), 569 (frozen redfish fillets); **14:** 627, 925 (effects of temperature fluctuations on frozen cod fillets); 637 (discoloration of frozen lobster meat); **16:** 43, 755 (effect on flesh lipid hydrolysis); **20:** 997 (accelerated cooling of salt fish)

B 11: 28 (principles); **20:** 12 (frozen fillets; jacketed room); **24:** 7 (frozen mackerel for canning); **59:** 420 (effect on oily fish; rancidity); **100, 103** (trawler holds); **126:** 5 (for vessel holds)

PRA 1: 7 (prevention of freezer burn); **2:** 7, **41:** 4 (changes in fillets during); **2:** 12 (effect on drip formation); **10:** 8 (of bait); **32:** 5 (effect on oil yield from cod livers); **43:** 13 (during transportation); **54:** 7 (adsorption refrigeration); **66:** 9 (of plaice); **71:** 7 (fat hydrolysis of fillets)

PRC 1: 38 (equipment for transporting freshwater fish catches in chilled fresh water)

PRP 3: 3, **5:** 7, **8:** 3, **17:** 5, **18:** 7, **27:** 11, **33:** 13, **37:** 12, **42:** 16, **43:** 3, **48:** 19, **71:** 15, **74:** 3, **87:** 47, **88:** 57, **92:** 21 (principles, & effects on products); **8:** 3, **11:** 7, **15:** 11, **32:** 9, **45:** 7, **51:** 12, **87:** 47, **88:** 57, **92:** 21 (equipment); **8:** 3, **11:** 7 (jacketed room); **11:** 14, **17:** 5, **37:** 12, **42:** 16, **71:** 15, **74:** 3, **87:** 47, **88:** 57, **92:** 21, **94:** 3 (desirable temperatures); **11:** 14, **22:** 14, **27:** 11, **71:** 15 (effect on spoilage bacteria); **89:** 76, **93:** 25 (jacketed display cabinet); **105:** 12 (of shucked oysters); **114:** 19 (of albacore tuna)

CVI 15 (effects on nutritive value)

CVG 23 (plastic film for packaging)

S 309 (principles; applications; facilities); **324** (protein denaturation of Atl. halibut below 10°F); **332** (general); **338** (jacketed room principles); **424** (oxidative rancidity during); **427** (equipment; fillet freezing rates); **455** (of sardines before canning); **510B, 566** (storage of Atl. fishery products); **672** (review of recent advances); **725** (muscle physical & chemical changes during); **741, 742** (procedures & problems); **781** (quality changes in refrozen cod fillets); **882** (Ceylon cold storage plant)

SS 265 (CO_2 as refrigerant); **339, 950** (best preservative method); **553** (by natural cold); **586** (general); **632, 996** (importance to industry); **997** (on trawlers); **1066** (factors affecting quality); **1122** (engineering & technological developments); **1140** (factors affecting shelf life of products); **1237** ("wet" fish blocks for fish sticks)

Regeneration (*see also* Starfish)

SS 715 (teleost scales)

Regulation (*see* Management; Nets, selectivity of; Size; *also* names of international commissions)

Reid, Helen

C 5: 457 (Chamcook lakes, N.B., pumpkinseed)

Reid, Kenwyn Garth

J 17: 371 (phosphorus compounds in lingcod muscle)

Reid, Margaret E.

C 4: 431 (cunner distribution & development)

S 6 (success of *Sagitta* reproduction)

Reiner, Eugene Jacob

S 624, 701 (hypocholesterolemic factor in marine sterols); **865** (deoxyribonucleoside phosphates synthesis & hydrolysis)

Reinhardtius hippoglossoides (*see* Halibut, Greenland)

Relict fauna (*see* Fauna, relict)

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Remilegia australis (*see* Whalesucker)

Remora (*Remora remora*) (blue sharksucker)
J 16: 512 (off N.S.)
B 155: 405 (full description)
S 203, 226 (off N.S.)

Remora brachyptera (*see* Remora, spearfish)

Remora remora (*see* Remora)

Remora, spearfish (*Remora brachyptera*) (swordfish sucker)
J 16: 512 (or swordfish & sunfish)
B 155: 404 (full description)

Remple, Jacob Gerhard
J 2: 209 (*Chironomus hyperboreus* life history & morphology)

Repellents (*see also* Guiding)
PRP 90: 21, **98**: 10 (to spawning migratory salmon)
S 444, 666, 693 (to spawning migratory salmon)

Reproduction (*see also* Eggs; Hatcheries; Life history; Maturity; Physiology, reproduction; Redds; Reproduction curves; Spawning; *also* other cognate headings, including names of individual organisms)
C 1901: 27 (*Mya*); **1902–05**: 2 (rate of Infusoria); **1915–16**: 74 (Atl. oyster); **1918–20**: 75 (muttonfish); **1921**: 107 (Pac. herring); **1**: 9 (lumpfish), 292 (several Pac. fishes); **2**: 183 (shad), 439, **4**: 440 (cunner); **3**: 270 (chinook salmon); **4**: 19 (*Bankia*), 413 (*Littorina*), 443 (mackerel); **5**: 33, 47, **8**: 346 (sockeye salmon); **5**: 361 (*Enchelyopus*), 451, **6**: 165 (whitefish); **5**: 465 (pumpkinseed); **6**: 225, **7**: 325 (ciscoes); **7**: 255 (bivalves); **8**: 2 (Coregonidae), 20 (Hudson Bay fishes), 421 (lobster)
J 1: 1 (copepods), 159, **4**: 96, **6**: 37, 311 (Atl. salmon); **2**: 209 (*Chironomus*), 223, **3**: 339, **5**: 71 (lobster); **2**: 311, **4**: 151, 210, **8**: 178, 453 (sockeye salmon); **2**: 383, **3**: 403, **6**: 217, **7**: 224, **9**: 450, **16**: 853 (pink salmon); **4**: 69, **19**: 715 (rainbow trout & feed effect on its fecundity); **4**: 287 (Atl. oyster), 337 (*Zoarces*); **5**: 84 (starfish), 105, **15**: 1383 (Atl. cod fecundity); **5**: 145 (*Cladocera*); **6**: 140 (*Paphia*), 419 (*Themisto*); **7**: 176 (lake trout), 363 (*Odontosyllis*), 417, **15**: 313 (Pac. herring); **8**: 134 (amphipods); **9**: 1, **10**: 326 (arctic char); **9**: 223, **20**: 685 (zooplankton & its fecundity); **9**: 450, **16**: 853 (chum salmon & its fecundity); **10**: 85 (*Micronereis*), 211 (rate: theory of), 293 (coho salmon), 413, **18**: 293 (whitefish & its fecundity); **11**: 1 (trout-perch), 535, **20**: 1465 (haddock & its fecundity; correction on **14**: 997); **11**: 559 (as related to stock density); **12**: 781 (scallops), 930 (Lake Winnipeg burbot); **13**: 449 (Nfld. herring), 647 (lemon sole), 799, **20**: 899 (brook trout & its fecundity); **14**: 693 (squid), 953 (brill spawning stock); **15**: 219 (bearded seal); **19**: 497 (Pac. cod fecundity); **20**: 1489 (NW Atl. minke whale); **21**: 597 (American plaice fecundity; correction on page 1554), 757 (guppy fecundity), 773 (fur seal), 1403 (B.C. pandalid shrimps)
B 1: 14 (plaice); **2**: 11 (lumpfish); **3**: 9 (angler); **4**: 10 (muttonfish); **5** (lobster); **17** (B.C. herring); **18**: 3 (Atl. cod); **54**: 17 (lingcod); **21**: 6 (Atl. salmon); **22**: 15, **60**: 6, **131** (Atl. oyster); **25**: 12 (haddock); **30**: 11 (Dungeness crab); **34** (B.C. oysters); **50, 53**: 2 (sockeye salmon, artificially); **56**: 48 (whitefish); **64**: 8 (B.C. smelt); **79**: 4 (speckled trout); **84**: 29 (Cowichan R. salmons & trout, B.C.); **98**: 10 (beluga); **118** (ringed seal); **119** (types & uses of curves for); **130** (swordfish); **132** (pilot whale); **137** (arctic & Atl. seals & walrus)
PRA 3: 5 (mussel); **37**: 17 (Atl. oyster drill); **69**: 7 (boring sponge)
PRP 6: 9 (B.C. commercial clams); **10**: 5, **34**: 8 (pink salmon fecundity); **14**: 5, **43**: 14, **82**: 16, **82**: 17 (sockeye salmon fecundity); **22**: 19, **40**: 8 (B.C. oyster larvae distribution); **23**: 24 (lingcod fecundity); **25**: 12 (skate fecundity); **28**: 3, **79**: 33 (B.C. salmons fecundity); **36**: 12 (brown trout fecundity); **45**: 23 (B.C. salmons natural spawning efficiency); **51**: 16 (B.C. dogfish); **52**: 18 (red snapper fecundity); **72**: 36 (B.C. harbour seal); **73**: 68 (lemon sole fecundity); **88**: 70, **93**: 7, **96**: 22 (pink salmon spawning efficiency); **89**: 88 (coho salmon fecundity); **91**: 13 (sockeye spawning efficiency); **98**: 17 (brill)
CAG 2 (walrus)

NRB 2: 38, **17**: 33 (capelin); **7**: 30 (lobster); **9** (various Nfld. trouts); **14**: 87 (Nfld. cod); **15**: 13 (spiny dogfish)

NSB 15: 12 (lobster)

S 6 (*Sagitta elegans*); **12** (nudibranchs); **29** (coloured light effect on rate of algae); **72** (littleneck clam); **73** (butter clam); **95** (ascidians); **164** (lobster); **194** (pilchard); **214** (rainbow trout weight loss during); **237** (kokanee & sockeye salmon); **272** (haddock); **282, 288** (adequate number of adult Pac. salmon); **289** (Atl. salmon); **294** (re recruitment); **327, 343, 363** (B.C. herring); **484** (re productivity & yield); **490** (shad nuptial behaviour); **513, 515** (fused *Cliona* larvae); **651** (turkey fecundity); **711** (pink salmon potentials)

SS 73, 129, 1280 (*Odontosyllis* swarming); **131** (lobster); **369** (natural vs. hatchery); **408** (coonstripe shrimp); **827** (cold weather effect on walleye); **1020** (delayed implantation in seal); **1207, 1282, 1283, 1284** (Atl. cod behaviour)

Reproduction curves

J 21: 477 (involving compensatory &/or depensatory processes), 1245 (population dynamics model for Pac. salmon), 1329 (stock size & resultant production for sockeye)

B 119 (types & uses; *see* its index)

Research (general) (*see also* Stations)

SS 252 (impressions of conference); **253, 254, 255, 1392** (in fisheries)

Reservoirs, freshwater (*see* Dams; Obstructions to migration)

Reservoirs, tidal

J 18: 163 (of proposed Passamaquoddy power project)

Resistance to disease

PRA 29: 15 (oysters)

Resources (*see also* Abundance)

CNG 64 (Canadian fisheries productive capacity)

S 334, 452, 453, 851 (potential, abundance, distribution & exploitation, of B.C. fisheries)

SS 134 (unutilized Canadian fishery); **885, 909, 1108** (B.C. fisheries); **968** (vs. human population)

Respiration (*see also* Gills; Physiology, respiratory system)

J 14: 298 (marine plankton; correction on page 997); **16**: 175 (re O_2, CO_2 & temperature in fishes), 321 of trout after exercise); **17**: 871 (of *Chlamydomonas* algae); **20**: 373 (Atl. cod); **21**: 1183 (re young sockeye salmon metabolism)

PRA 2: 20 (trout re water temperature)

S 663, 698 (gill irrigation in fishes)

SS 555 (seal blood characteristics)

Reticulosa (protozoa)

C 1917–18: 229 (Canadian Atl.: check-list & index)

PF 1b (Canadian Pac.: distribution)

S 76: 11, 17 (B.C.)

Retina (*see* Eye; Light, reactions to)

Retson, Mary Elizabeth

S 652 (long-chain dicarboxylic acids preparation); **662** (unsaturated fatty acids ozonolysis)

Revival

C 1911–14(I): 73 (of chilled fish)

B 94: 19 (of Alaska blackfish after freezing)

Rhachianectes glaucus (*see* Whale, California gray)

Rhamphocottus richardsoni (*see* Sculpin, grunt)

Rhectogramma sherborni (*see* Cardinalfish, Sherborn's)

Rheotaxis (*see* Flow)

Rhinichthys atratulus (*see* Dace, blacknose)

Rhinichthys cataractae (*see* Dace, longnose)

Rhinichthys falcatus (*see* Dace, leopard)

Rhinichthys osculus (*see* Dace, speckled)

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Rhinochimaera atlantica (*see* Chimaera, knifenose)

Rhinogobiops nicholsii (*see* Goby, crested)

Rhizocephala (*see also* Cirripedia)
SS 53, 76 (parasitic on shrimps)

Rhizopoda
C 2: 507 (B.C.)
S 28 (B.C. new or rare); **76**: 11, 17 (B.C.)
SS 315, 346 (B.C. alpine)

Rhizoprionodon terraenovae (*see* Shark, Atlantic sharpnose)

Rhodoglossum (red seaweeds)
B 127: Fig. 25 (*R. affine* as B.C. resource)

Rhodomela (red seaweeds)
B 127: Fig. 18 (*R. larix* as B.C. resource)

Rhodymenia (red seaweeds)
B 127: Figs. 12, 27 (*R. pertusa* & *R. palmata* as B.C. resources)

Riboflavin (*see* Vitamin B group)

Ribonucleic acid (*see* Acids, nucleic)

Ribose (*see* Browning; Nucleotides; Sugars)

Rice, Christine Elizabeth
C 4: 95 (clam muscle spoilage), 227 (haddock, lobster & clam spoilage)

Rice, Frederick Anders Hudson
S 273, 274 (Irish moss extract studies)
SS 787 (Irish moss ketoglutaric acid)

Richards, James Frederick
J 7: 430 (*Pseudomonas* from cod fillets)
PRA 51: 3, 7 (fish quality in Ottawa retail stores)

Richardson, George Howard
S 350 (alkali isomerization procedure)

Richardson, L. R.
SS 660 (speckled trout new copepod parasite)

Richardsonius balteatus (*see* Shiner, redside)

Richmond Bay, P.E.I.
C 1914–15: 55, **1915–16**: 72 (oceanography re oysters)

Ricker, Karl Edwin
SS 1228 (North American glacial relict crustaceans)

Ricker, William Edwin
J 3: 363 (limnology of Cultus L., B.C.), 450 (Cultus L. sockeye salmon feed & supply); **4**: 19, 33 (seasonal & annual variations in Cultus L. pelagic net plankton sampling), 192 (Cultus L. "residual" & kokanee salmon); **5**: 43 (catch re unit effort), 293 (fish predation on young sockeye), 315 (predator reduction effect on young sockeye survival); **9**: 204 (Cultus L. benthos); **10**: 293 (Cultus L. & Sweltzer Creek sockeye); **11**: 559 (stock & recruitment; correction on **12**: 941); **15**(5): i, (6): i (Foreword to issues); **15**: 991 (sustained yield models); **16**: 515 (translation of paper by L. S. Berg; correction on page 930), 897 (kokanee & residual sockeye); **17**: 929 (dwarf coastrange sculpins); **19**: 531 (sockeye ocean growth & mortality); **20**: 257 (fish population dynamics); **21**: 1 (sustained yields from fluctuating environments), 905 (Pac. salmon growth & mortality)
B 110 (Board publications titles & index, 1901–54); **119** (computations for fish populations biological statistics; corrections on **J 16**: 391)
PRP 18: 3 (fish predation on sockeye); **21**: 14 (plankton re Cultus L. sockeye); **36**: 3 (seasonal growth rates of young salmon & squawfish)
CNG 47 (titles & index of Board Circulars, 1935–57); **64** (Canadian fisheries productive capacity); **65** (Russian–English glossary of aquatic organisms & biology)
S 125 (critique of O_2 saturation measures in lakes); **158** (plankton enumeration sampling & statistics); **167** (confidence limits, Poisson distribution); **200** (Cultus L. area Odonata); **208** (Cultus L. area stoneflies); **237** (kokanee salmon origin); **295** (fish production computation); **340** (predator abundance re prey survival; correction on **J 12**: 941); **359** (compensatory mortality re population abundance); **364** (protection & legislation effects on Pac. herring & halibut fisheries); **381** (Pac. salmon for Atl. waters?); **443** (marking & tagging desiderata); **484** (production, reproduction & yield); **535** (fisheries quota

regulation principles); **713** (pink salmon populations abundance regulation); **813** (Pac. oyster seed mortality statistics); **843** (Nemouridae *Isocapnia* species); **851** (past & future B.C. fisheries); **872** (6 new species of *Allocapnia* stoneflies)

SS 439 (freshwater plankton nets utility); **507** (Ont. streams ecological classification); **565, 566, 662, 663, 766, 973, 1046, 1090, 1229, 1303, 1340** (Canadian & other stoneflies); **567** (ribbed toad); **568** (spawning migratory sockeye salmon behaviour); **626** (Canadian lacustral agriculture); **627, 628, 629, 661** (British & European fisheries biology & culture); **641, 819** (water bodies productivity); **645** (predator control to decrease young sockeye mortality); **687** (Lake Nipissing area birds); **780** (fishing mortality & effort); **802** (minimum size limits re maximum yield); **803, 810, 860** (statistical methods for fishery problems); **834** (Hell's Gate effect on Fraser R. sockeye); **919** (Fraser R. sockeye cyclic dominance); **1046** (stoneflies nomenclature); **1089** (Spear L., Indiana, fish & fishing); **1263** (NE Pac. salmons morphology factors); **1302** (dynamics theory of fish populations abundance); **1304** (Canadian fisheries productive capacity); **1339** (fish culture); **1341** (Connecticut R. shad); **1342** (mew gull nesting colony); **1397** (need for habitat)

Rickets
PRP 41: 17 (bone in canned salmon potential inhibitor of)

Riddell, William Andrew
J 2: 1 (seawater nitrate determination), 463 (canned blueback coho salmon proximate analysis), 469 (mineral constituents of some B.C. food fishes), 473 (canned blueback coho mineral constituents)
PRP 23: 14 (beef liver re fish hatchery feed); **31:** 14 (phenolated pilchard oil); **33:** 13, 17 (frozen halibut muscle biochemistry)
B 59 in part (marine animal oils)

Rigby, Capt. Elmer George
J 15: 1147 (service with Board)

Rigby, Margaret Sophia Laird
B 28 (Board publications list, 1922–30)

Rigor mortis (*see also* Flesh; Muscle)
C 3: 457 (re muscle glycogen, lactic acid & P compounds)
J 16: 33, **18:** 321, 641, **20:** 45, 1145 (factors re resultant effects on biochemical changes in muscle); **20:** 1145 (in lingcod red vs. white muscle); **21:** 857 (onset in steelhead trout)
S 38, 52 (re muscle lactic acid)
SS 276 (muscle chemical changes)

Riley, Gordon Arthur
J 10: 211 (growth & competition re natural populations)

Rimicola muscarum; R. eigenmanni (*see* Clingfish, kelp)

Riou, Laurent
PRA 37: 9 (seal liver nutritive value)

Ripple Rock, B.C.
PRP 111: 3 (effects on fish when rock removed by blast)

Ritchie, Arthur David
S 38 (lactic acid in rigor muscle); **52** (lactic acid in fish & crustacean muscle); **100** (*Pecten* adductor mechanism)

River bottoms (for flood damage to, *see* Flow)
J 13: 309 (reaction of pink salmon fry to)

River dilution effect on sea (*see* Dilution effect)

Rivers Inlet, B.C.
J 14: 605, **18:** 907 (physical oceanography); **15:** 331, 867 (salmon characteristics & fishery)
PRP 82: 9 (sockeye salmon run)
S 453, 851: 13 (sockeye abundance & exploitation)

Roach (*Leuciscus rutilus*)
J 15: 685 (sense of taste or smell)

Roach, Stewart Williard
J 21: 845 (air-lift fish pumping)
B 126 (refrigerated seawater fish storage & transport)

PRP 76: 76 (automatic smoke generator); **77**: 108 (anchovy canning); **79**: 39 (detecting shell in crab meat by ultraviolet light), 43 pressure cooling in cannery retort), 44 (infra-red heat processing re fish drying or canning); **83**: 40 (anchovy gibbing machine); **86**: 16 (canning salmon cakes); **91**: 10 (vacuum pretreatment in fish canning); **94**: 3 (brine freezing fish); **97**: 27 (plastic net-float buoyancy); **98**: 23 (chilled seawater for holding shrimp); **100**: 3 (refrigerated seawater for holding trolled salmon); **104**: 3, **108**: 10, **112**: 3 (refrigerated seawater installation); **106**: 7 (storing live crabs in refrigerated seawater); **114**: 7 (water-lift pump for unloading fish)
CVG 27 (seine boat tuna-freezing equipment); **28, 29** (unloading fish by pumping); **30** (salmon packing equipment & operation)
SS 1355 (vacuum fish-unloading pumps)

Roberts, Eve (*see also* Onofrey, Eve)
J 18: 321 (rigor re fish muscle biochemical changes), 637 (Pac. salmon muscle proteins); **19**: 321 (dogfish gelatin); **20**: 101 (Salmonidae muscle myogen patterns)
PRP 114: 19 (prior storage effects on frozen B.C. albacore)
S 695, 696 (Pac. salmon muscle proteins); **820** (electrophoretic separation of phosphoglucomutases); **866** (steelhead trout glycolytic enzymes); **884** (young Pac. salmons hemoglobin patterns)

Roberts, Kenneth George
PRC 2: 3 (Great Slave L. research vessel)

Robertson, Albert Duncan
C 1911–14(II): 95 (Georgian Bay Mollusca); **1914–15**: 55 ("barren" oyster bottoms)

Robertson, Alexander
SS 174, 630 (hatching Pac. salmon fry in gravel); **175** (raceway as salmon trap); **176** (parent salmon as feed for young); **205** (salmon fecundity); **223** (salmon parent stream theory); **224** (young sockeye salmon growth); **568** (spawning migratory sockeye behaviour)

Robertson, Anne Cochrane (*see also* Connor, Anne Robertson)
J 17: 487 (glycogen, etc. alterations in exercised trout)

Robertson, Donald George
CPO 1958-10, 1959-11, -15, -27, 1960-23, -29, 1962-5, -17, 1963-4, -6, 1964-3, -8, -9 (oceanographic observations between Juan de Fuca Strait & ocean lightship; also from lightship)

Robertson, James Grant
J 11: 624 (trophic status of Port John L., B.C.)
PRP 75: 31 (Smith Inlet sockeye salmon); **80**: 55 (sockeye fry production in a small watershed)

Robinson, Charles Budd Jr.
C 1902–05: 71 (Canso, N.S., seaweeds)

Roccus americanus (*see* Perch, white)

Roccus chrysops (*see* Bass, white)

Roccus saxatilis, R. lineatus (*see* Bass, striped)

Rock-boring organisms
S 245 (clam)
SS 245 (clam; sea urchin)

Rockcod (*see* Rockfish, copper; Rockfish, quillback)

Rockfish (*see* following species; *also* Rockfishes, in general; *also* Bass, striped)

Rockfish, banded (*see* Rockfish, blackbanded)

Rockfish, big-eyed (*see* Rockfish, sharpchin)

Rockfish, black (*Sebastodes melanops*) ("black bass")
B 68, 208, **68R**: 254 (full description); **89**: 337 (oil)
S 290 (B.C. records)

Rockfish, blackbanded (*Sebastodes nigrocinctus*) (banded rockfish; tiger rockfish)
J 18: 279 (association with goose barnacle on glass float)
B 68: 229, **68R**: 279 (full description)
PRP 111: 3 (effect of explosion on)

Rockfish, blackblotched (*Sebastodes crameri*)
B 68R: 258 (full description)

Rockfish, blackthroat (*see* Rockfish, rougheye)

Rockfish, black-throated (*Sebastodes introniger*)
B 68: 219 (full description)

Rockfish, blue (*Sebastodes mystinus*) (priestfish)
B 68: 209, **68R**: 252 (full description)

Rockfish, brown (*Sebastodes auriculatus*) (*S. dallii*)
B 68: 223, **68R**: 273 (full description)

Rockfish, canary (*see* Rockfish, orange)

Rockfish, copper (*Sebastodes caurinus*)
C 7: 465 (reaction to sound)
J 18: 279 (association with goose barnacles on glass float)
B 68: 225, **68R**: 275 (full description); **89**: 337 (oil)
PRP 111: 3 (effect of explosion on)
S 81 (muscle creatine content)

Rockfish, flag (*Sebastodes rubrivinctus*) (flag snapper; Spanish flag)
J 11: 335 (description)
B 68R: 270 (full description)

Rockfish, greenstripe (*Sebastodes elongatus*)
B 68: 221, **68R**: 272 (full description)

Rockfish, lobe-jawed (*see* Rockfish, splitnose)

Rockfish, longjaw (*Sebastodes alutus*) (*Sebastes alutus*; Pacific ocean perch)
B 68: 215, **68R**: 262 (full description)
S 290 (B.C. records); **851**: 46 (B.C. fishery history & prospects)

Rockfish, longspine channel (*Sebastolobus altivelis*)
J 19: 1169 (egg masses & development)

Rockfish, olive-backed (*see* Rockfish, stripetail)

Rockfish, orange (*Sebastodes pinniger*) (canary rockfish)
C 1: 290 (spawning)
J 18: 279 (as albacore feed)
B 59: 403, **89**: 337 (oil); **68**: 210, **68R**: 256 (full description)
S 290 (W coast Vancouver Is.)

Rockfish, orange-spotted (*see* Rockfish, quillback)

Rockfish, pigmy (*Sebastodes wilsoni*) (Wilson's rockfish)
C 7: 323 (B.C. record)
B 68: 213, **68R**: 263 (full description)
S 290 (B.C. range extension)

Rockfish, quillback (*Sebastodes maliger*) (orange-spotted rockfish)
C 3: 15 (gill-cavity isopod parasite)
B 68: 226, **68R**: 276 (full description); **89**: 337 (oil)
PRP 111: 3 (effect of explosion on)
S 59 (reducing substances in blood); **81** (muscle creatine); **82** (arginase content of organs); **290** (B.C. records)

Rockfish, rasphead (*see* Snapper, red)

Rockfish, redstripe (*Sebastodes proriger*)
B 68: 214, **68R**: 260 (full description)

Rockfish, rosethorn (*Sebastodes helvomaculatus*) (*see* Rockfish, rosy)

Rockfish, rosy (*Sebastodes rosaceus* [later identified as aberrant form of *S. helvomaculatus*]
B 68R: 267 (description)

Rockfish, rougheye (*Sebastodes aleutianus*) (blackthroat rockfish)
B 68R: 261 (full description)

Rockfish, sharpchin (*Sebastodes zacentrus*) (big-eyed rockfish)
B 68: 222, **68R**: 271 (full description)

Rockfish, silvergray (*Sebastodes brevispinis*)
J 21: 855 (description & use; corrections on page 1554)

Rockfish, spinycheek (*Sebastolobus alascanus*)
J 19: 1169 (egg masses; development)
B 68: 230, **68R**: 280 (full description)
S 851: 46 (re B.C. rockfish fishery)

Rockfish, splitnose (*Sebastodes diploproa*) (lobejawed rockfish)
B 68: 217, **68R**: 266 (full description)

Rockfish, stripetail (*Sebastodes saxicola*) (olive-backed rockfish)
B 68: 216, **68R**: 264 (full description)
S 290 (B.C. record)

Rockfish, tiger (*see* Rockfish, blackbanded)

Rockfish, vermilion (*Sebastodes miniatus*)
B 68: 212, **68R**: 257 (full description)
S 290 (first B.C. record)

Rockfish, Wilson's (*see* Rockfish, pigmy)

Rockfish, yellowstripe (*Sebastodes nebulosus*)
B 68: 227, **68R**: 277 (full description); **89**: 337 (oil)

Rockfish, yellowtail (*Sebastodes flavidus*)
B 68: 207, **68R**: 253 (full description)
S 290 (first B.C. records)

Rockfishes, in general
PRP 75: 57 (predation by hagfish); **79**: 30 (in whale feed); **84**: 64 (B.C. winter trawl fishery); **98**: 3 (flesh ribose re browning by heat); **111**: 20 (landings for mink feed, B.C.)
CNG 33, 41 (B.C. winter catches, 1952–55); **64**: 48 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 11 (flesh & liver essential amino acids); **17** (B vitamins & amino acids)
S 453, 851: 46 (B.C. fishery history & prospects)
SS 120 (B.C.)

Rockling, fourbeard (*Enchelyopus cimbrius*)
C 1902–05: 89 (Canso, N.S.); **5**: 109 (temperature & salinity effect on development), 361 (spawning periodicity & embryonic death rate)
J 11: 250 (Belle Isle Strait larvae); **16**: 821 (Miramichi R., N.B.)
B 155: 193 (full description)
NSB 8: 28 (life history)

Rockling, silver (*Gaidropsarus argentatus*)
B 155: 200 (full description)

Rockling, threebeard (*Gaidropsarus ensis*)
B 155: 201 (full description)

Rockslide (*see* Babine River, B.C.)

Rocktrout (*see* Greenling, kelp; Greenling, whitespotted)

Rockweed, common (*Fucus evanescens*) (*see also* Seaweeds; Seaweed products)
B 127 (B.C. resources & uses)
CNG 44: 11 (as herring spawning substrate)

Rodgers, George Keith
J 16: 635 (current measurements in Knight Inlet, B.C.); **18**: 617 (Lake Ontario energy budget)

Rodgers, Reginald St. Clair
J 15: 701 (trimethylamine value of fillets)

Rogers, Harold M.
J 5: 164 (estuarial plankton occurrence & retention)
SS 688 (method of fish entering an estuary)

Rogers, Norma Irene
B 59 in part (marine animal oils)
PRP 50: 4 (vitamin A production factors), 12 (vitamin A fluorescent analysis)
CVI 6 (fish oils vitamin A)

Roe (*see* Eggs)

Ronald, Alexander Pollock
J 21: 1481 (oyster sulphur compounds)
S 564, 692 (isolation of salmon cortisones & cortisol); **567** (zone melting apparatus); **573** spawning migratory salmon biochemistry); **604, 620** (Pacific salmon plasma hormones); **770** (salmon steroid hormones metabolism)

Ronald, Keith
S 864 (fatty-acid pattern retention after glyceride ingestion)

Ronayne, Mark
SS 1164, 1166 (fish as dietary protein source); **1165** (St. Andrews Station open house); **1264** (St. John's Station open house)

Ronholt, Lael Lee
J 19: 1167 (range extension for 2 NE Pac. caridean shrimps)

Ronquil (*Ronquilus jordani*)
B 68: 157, **68R**: 364 (full description)
S 290 (W coast Vancouver Is.)

Ronquilus jordani (*see* Ronquil)

Rope (*see also* Gear, fishing)
SS 1148 (headline, for midwater trawl)

Rorquals (*see* Whale, blue; Whale, finback; Whale, minke; Whale, sei)

Rose, Robert Charles
J 10: 521 (chitosans preparation & viscosity)

Rosefish (*see* Redfish)

Rosefish, blackbelly (*Helicolenus dactylopterus*)
B 155: 337 (probable occurrence off Canadian Atl. coast)

Rosenblatt, Richard Heinrich
J 20: 1505 (redescription of rare B.C. cottid); **21:** 933 (new gunnel species)

Ross, Charles Keith
CPO 1962-2, -4, -6, -11, -14 (N Pac. water mass transport calculations)

Ross, Herbert Holdsworth
S 872 (6 new species of *Allocapnia* stoneflies)

Ross, Robert F.
B 10 (lobster paste preparation)
SS 314 (lobster paste preparation)

Rotatoria
C 4: 77 (notes on Canadian)
SS 464, 516 (Alaskan freshwater); **515** (B.C. marine)

Rotenone (*see* Poisons)

Rotifers (*see* Rotatoria)

Roundworms, parasitic (*see* Nematoda)

Rousseau, Jacques
J 12: 496 (flora of Chubb Crater, Que.)

Roussow, George
J 14: 553 (sturgeon spawning periodicity)

Roy, Gertrude
PRA 30: 5 (lobster biology)

Royal, Loyd A.
SS 1305 (oceanography re Fraser R. salmon migration & survival)

Rubber
B 59: 141, 354, **89:** 258, 300 (fish-oil products in manufacture)
PRP 25: 13, **28:** 6 (pilchard-oil products in manufacture); **46:** 19 (bands found on dogfish & salmon)

Rudd, Johan T.
SS 1077 (finback whales total mortality rates)

Rudderfish (*see* Barrelfish, American; Pilotfish)

Rudderfish, banded (*Seriola zonata*) (*S. dumerili;* amber-jack; shark pilot)
J 16: 509 (Canso Strait record, N.S.); **17:** 732 (off Lahave Bank)
B 155: 253 (full description)
SS 381 (N.S. occurrence)

Rudderfish, brown (*Icichthys lockingtoni*)
B 68: 203, **68R:** 232 (full description)

Ruminant livestock feed (*see also* Feedstuffs)
PRP 93: 20, **96:** 16, **104:** 23 (promotion of rumen fermentative digestion by fishery products); **110:** 13 (dogfish products re urea utilization)
S 373, 374 (effect of heat on herring meals for); **377, 457** (fermentative digestion stimulation by fishery products)
SS 341, 342 (analyses of fish meals from fresh vs. putrid materials)

Runner, blue (*Caranx crysos*) (hardtail; yellow jack)
B 155: 247 (full description)

Run-off (*see* Dilution effect; Flow)

Ruscarius meanyi (*see* Sculpin, Puget Sound)

Russia (*see* Union of Soviet Socialist Republics)

Russian-English glossary
CNG 65 (for aquatic organisms, biology, etc.)

Rustiness (mould discoloration)
C 1: 279 (of pickled herring)

Ruthergen, Raymond Alan
J 21: 1325 (*Mysis relicta* in Kootenay L., B.C.)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Ruvetto (*see* Oilfish)

Ruvettus pretiosus (*see* Oilfish)

Ryerson, C. G. S.
C 1911–14(II): 165 (Georgian Bay, Ont., Hiuronidea)

S

Saanich Inlet, B.C.
J 19: 1 (oceanography)
PRP 12: 7 (oceanography of stagnant deep basin)
S 123 (oceanography)

Sable Island, N.S. (*see* Lighthouse and lightship oceanographic stations, Atlantic coast)

Sablefish (*Anoplopoma fimbria*) (black cod)
J 4: 327 (quality preservation), 472 (vitamins in oils); **5**: 39 (bactericidal ice for holding), 516 (solubles amino acids); **8**: 377 (dispersion & growth); **13**: 357 (catches vs. temperature); **15**: 625 (fishery factors); **19**: 1175 (age determination of young)
B 37: 147, **59**: **89** (oils; *see* their indexes); **68**: 239, **68R**: 239 (full description)
PRP 22: 8, **44**: 4, **45**: 21, **48**: 9, **82**: 20 (liver vitamin A values); **35**: 13 (visceral oil vitamin A); **45**: 7 (freezing); **46**: 3, **52**: 24 (canning); **53**: 9, **57**: 11 (nutritive values); **65**: 73 (smoking of); **75**: 57 (prey of hagfish); **110**: 16 (antibiotic preservatives), **111**: 3 (effect of explosion on)
CNG 64: 48 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 11 (liver solubles essential amino acids); **17** (thiamin & riboflavin values)
S 389 (in B.C. trawl fishery); **394**, **453** (B.C. fishery); **708** (plasma steroid hormones); **851**: 47 (B.C. fishery history & prospects)
SS 659 (viscera oil vitamins)

Saccharomyces (*see* Yeasts)

Sadler, Wilfred
C 1917–18: 181, **1918–20**: 103 (swelled canned sardine bacteriology); **1917–18**: 217 (planktonic copepods bacterial destruction)
B 12 (Pac. halibut yellowing bacteria)
SS 160, **206** (swelled canned sardine bacteriology)

Sagitta (*see* Chaetognatha; Indicator species)

Sagre, rough (*Etmopterus princeps*)
B 140: 33, **155**: 45 (description & records)

Sailor-fish (*see* Sculpin, sailfin)

Saint . . . . (*see* St. . . . . headings following the subject heading Squires)

Sakinaw Lake, B.C.
J 21: 1321 (seawater in)

Salinity of oceans and certain lakes (The following references are of general nature only; for specific data, interpretations, etc., *see* Lakes, saline; Limnology; Oceanography; Salinity, reactions to)
J 16: 381 (portable electrical conductivity apparatus for determining; correction on page 930)
B 125: 11, 19, **125R**: 11, 19 (high & low precision determination methods for)
PRP 102: 24 (determination for, & composition of seawater)
CPO 1960-2 (conductivity salinometers)
S 473 (classification of daily seawater data)
SS 431 (oceanography re biology)

Salinity, reaction of organisms to (*see also* Acclimation)
C 3: 149 (gastropods); **4**: 9 (woodborers); **5**: 109 (*Enchelyopus*), 475 (skate blood); **8**: 403 (plankton diatoms)
J 2: 485 (lobster larvae); **4**: 409, **6**: 399 (Atl. salmon); **5**: 84 (starfish), 253 (oysters); **6**: 498 (mudblister worm); **8**: 164, **15**: 391, **17**: 295, **18**: 401 (Pac. salmons); **9**: 169, **15**: 1403, **18**: 401 (trouts); **9**: 377 (red halophilic bacteria), 388 (cod muscle); **13**: 247 (lethal limits for adult lobster); **16**: 121 (re fish growth); **17**: 725 (re Atl. herring survival); **20**: 525 (effect on coho salmon resistance to

toxins), 1519 (re NE Atl. zooplankton distribution); **21**: 1535 (salmonids osmoregulation)

B 1: 19 (plaice); **5**: 3 (lobster); **22**: 15, **34**: 11, **131** (oyster); **57**: 49 (Atl. salmon)

PRA 16: 10 (oyster); **62**: 4 (cod)

S 40 (marine animals); **45** (woodborers); **58** (dogfish); **78** (digestion by ascidians)

SS 179 (fish eggs & larvae); **688** (stickleback in estuary); **998** (Pac. herring embryo)

Salinometer

PRP 84: 51 (technique, for brines & dips)

Salmo (in general)

B 94: 6 (arctic & subarctic distribution)

S 551 (re *Oncorhynchus* origin & speciation)

Salmo clarkii alpestris (*see* Trout, mountain cutthroat)

Salmo clarkii clarkii (*see* Trout, coastal cutthroat)

Salmo clarkii lewisii (*see* Trout, Yellowstone cutthroat)

Salmo gairdnerii (*see* Trout, steelhead; *also* Trout, Kamloops; Trout, rainbow)

Salmo gairdneri whitehousei (*see* Trout, mountain Kamloops)

Salmo kamloops (*see* Trout, Kamloops; *also* Trout, rainbow)

Salmo kamloops whitehousei (*see* Trout, mountain Kamloops)

Salmo salar (*see* Salmon, Atlantic)

Salmo salar sebago (*see* Salmon, Atlantic landlocked)

Salmo trutta (*see* Trout, brown)

Salmon (inclusive Pacific species) (biology) (The following references are to publications relating to all five commercial species of northeast Pacific salmons (chinook, chum, coho, pink and sockeye) as a group. *See also* the subsequent headings for each of these species separately; *also* International North Pacific Fisheries Commission; Salmonidae)

C 1918–20: 7 (growth rate)

J 9: 265 (temperature tolerance of young); **12**: 362 (fry movement), 451 (Skeena R. fishery); **14**: 651 (possible effects of proposed river-system diversions); **15**: 815 (retina structure), 1027 (measuring water seepage through spawning bed gravel); **18**: 679 (osteology & phylogeny); **19**: 1025 (respiratory metabolism); **21**: 711 (blood sampling technique), 891 (Gulf of Alaska vertical distribution); 995 (salinity preferences in migration), 1245 (population biology simulation method), 1267 (key based on scales)

B 94: 6 (arctic & subarctic); **101, 106** (effect of Babine R. rockslide); **114** (re hydroelectric development); **117** (guiding migrating young); **136** (osteology re identifying oceanic stocks)

PRP 6: 6, **81**: 91 (hybridization); **28**: 3 (egg content); **30**: 9 (hooked snout development); **66**: 12, **67**: 23, **68**: 65, **69**: 70, **70**: 10, **72**: 28, **74**: 6, 9, **78**: 6 (of Skeena R. lake system); **80**: 50 (tagging); **84**: 63 (herring tag in stomach); **86**: 18 (length, weight, age & feed of young); **90**: 3 (Babine R. escapement); **106**: 24 (early ocean residence); **107**: 28 (NE Pac.)

CNG 14 (Skeena R. area catch predictions, 1948); **64**: 33 (productive capacity)

S 129 (tagging re conservation); **202** (Acanthocephala parasites); **391** (freshwater survival); **409** (research review, with bibliography); **412** (management problems); **445** (lethal temperature limits); **452, 453** (B.C. resource potential, abundance, distribution & exploitation); **494** (muscle nucleic acids); **543** (identity of louse with Atl. salmon louse); **551** (origin & speciation); **654, 655, 656, 657, 658, 669, 722, 723, 724, 769, 859** (INPFC reports on many aspects of oceanic research on one or all species); **695, 696** (muscle myogens); **851**: 4 (history & prospects of fishery)

SS 71, 204, 539 (life cycles); **72, 93** (age & fishery); **135** (flesh colour); **174, 630** (hatching eggs in gravel); **175, 938** (obstructions to migration); **194** (growth rate); **195** (enemies of); **319, 533, 939, 986** (general investigations); **355, 356, 357** (trolling for); **366, 491, 602, 639, 650, 671, 991** (migrations & homing); **389, 540, 700, 773** (identification); **538** (hybrids); **539** (meristic variations); **551** (origin & speciation); **598** (scale development & pattern); **705** (in Arctic Ocean); **712** (not established on Atl. coast); **727, 857** (egg mortality); **832** (natural propagation efficiency); **892** (Skeena R.); **986** (fundamental problems); **1153** (oceanic research); **1263** (environment re heredity & morphology); **1301** (Gulf of Alaska tagging); **1304** (productive capacity); **1348** (muscle myogens)

Salmon (inclusive Pacific species) (products) (The following references are to publications relating to all five commercial species of northeast Pacific salmons (chinook, chum, coho, pink and sockeye) as a group. *See also* the subsequent headings for each of these species separately)

C 8: 265 (liver oil vitamin A)

J 4: 162 (firmness measurement of canned); **5**: 428 (body, liver & intestinal oils & vitamins); **12**: 85 (economics of catches & prices)

B 37, 59, 89 (oils characteristics & uses; *see* their indexes)

PRP 3: 3 (rancidity development); **3**: 5, **9**: 23 (glue from heads; correction on **7**: 8); **12**: 3, **16**: 7, **22**: 8 (liver oils); **14**: 12, **42**: 16 (cold stored); **23**: 22, **55**: 12 (crystals in canned); **26**: 12 (cooling & freezing rate); **28**: 14, **29**: 12, **30**: 11, **33**: 20 (inspection data for canned); **53**: 9 (nutritive values); **44**: 8, **45**: 21 (oil); **63**: 27 (home canning); **63**: 43 (expansion coefficient of offal oil); **65**: 73 (smoking); **70**: 18 (bile recovery & uses); **71**: 5 (egg oil); **73**: 58, **75**: 51, **76**: 71, **80**: 47, **82**: 52 (separation, recovery & uses of canning wastes); **83**: 45 (economics of glazing); **84**: 51 (brining effects); **86**: 16 (canned cakes); **95**: 39, **104**: 10 (salt uptake from chilled seawater); **114**: 7 (pump for unloading)

CVI 11 (essential amino acids in offal meal); **16** (viscera byproducts recovery); **17** (flesh vitamins & amino acids)

CVG 30 (chilling on packer vessel)

MSP 4 (nature of glass-like crystals in canned); **5** (nature of "curd" in canned)

S 434 (flesh Na & K content); **494** (muscle nucleic acids); **851**: 4 (historical review & future prospects)

SS 142 (grading); **316** (B.C. harvest); **724** (nutritive value of canned); **791** (mild curing)

Salmon, Atlantic (biology) (*Salmo salar*) (ouananiche; black salmon; *see also* Salmon, Atlantic landlocked; Salmonidae)

C 1902–05: 91 (trematode parasites); **1917–18**: 149, 169 (hatchery disease, N.B.); **3**: 305 (recapture of tagged)

J 1: 159 (migration age); **2**: 299, **3**: 323, **4**: 48, **5**: 227, **11**: 388 (predation by birds); **2**: 379 (age determination), 391 (homing, Apple R., N.S.), 449 (feed of fry); **3**: 169 (vertebrae number in B.C. hatchery); **4**: 1 (heritability of local behaviour), 96 (sea movements of kelts), 323 (factors re emigration), 409 (resistance to seawater), 441 (weight re length); **5**: 172 (mortality from louse), 227 (cyclic abundance of salmon vs. birds), 440 (scale regeneration), 485 (high-temperature mortality); **6**: 24 (louse life-history), 37 (redds & artificial spawning beds), 90 (diurnal feeding activity), 311 (variable seaward migration), 399 (parr migration); **7**: 248 (re stream fertility), 432 (movement in steady current); **9**: 92 (Ungava Bay); **11**: 255 (Strait of Belle Isle). 362 (stream studies on planted), 933 (oxygen supply to eggs; correction on **16**: 385); **13**: 219, **14**: 135, 141 (tagging); **14**: 153 (ova mortality from electrofishing); **15**: 1146 (investigations review), 1213 (Shubenacadie R., N.B.); **16**: 515 (European seasonal "races"; correction on page 930), 815 (Miramichi R., N.B.); **17**: 453 (brook impoundment effects), 507 (fishways for), 713 (re tidal power project); **18**: 117 (age, Miramichi R.), 259 (intraocular measurements), 679 (osteology & phylogeny); **19**: 625 (underwater observation of behaviour); **20**: 101 (species differentiation by muscle myogen patterns), 827 (DDT effects), 1245 (reaction to light; correction on **21**: 1553);

20: 1355 (body fluid regulation); **21**: 17 (Cu & Zn compounds lethality), 27 (movements in small streams)

B 7: 19 (islets of Langerhans); **21** (of Maritimes); **32**: 35 (in B.C.); **51** (return from sea); **57** (angling, Margaree R., N.S.); **58** (predator bird control); **68**: 93, **68R**: 107 (description of B.C. planted); **84**: 23 (plantings in Cowichan R., B.C.); **94**: 6 (arctic & subarctic); **99** (factors controlling spawning ascent & population); **133** (bird predator–prey relations; correction on **J 21**: 1554); **155**: 107 (description & economics)

PRA 1: 12 (toxicity of metals to); **2**: 16 (fluctuation); **6**: 7, **8**: 6 (runs); **7**: 6 (fry behaviour); **7**: 6, **51**: 12, **67**: 19 (predators & control); **62**: 17, **69**: 3 (toxicity of insecticides to); **63**: 13 (overfishing); **68**: 20, **70**: 16 (Little Codroy R., Nfld.)

CJG 9: 18 (marking in Nfld.)

CNG 64: 22 (productive capacity)

CSG 38, 42 (sensitivity to Cu & Zn pollutant)

NRB 1 (Nfld.); **9** (re Nfld. trout); **12** (obstructions in Nfld. & Labrador rivers); **13** (E coast Nfld. & Labrador)

NSB 6: 12 (conservation, Nfld.)

S 41 (bacteriology); **140** (re suckers & trout); **165, 187** (migration & homing); **168, 225** (races & homing); **173** (age of landlocked); **175** (cause of periodic scarcity); **188** (of N America); **192** (sea behaviour); **205** (past & future culture); **223** (thyroid gland); **234** (Malpeque Bay, P.E.I.); **256** (return of marked); **259** (origin, aims & results of planting); **269** (for angling); **270** (disappearance in Ont.); **271** (embryology); **275** (research on free); **276** (angling vs. netting); **280** (are lake salmon hereditarily distinct?); **289** (biacropsis in ecology); **291** (re animal migration); **298** (re freshets); **313, 314, 384, 461, 541, 559** (electrofishing); **329** (Ungava Bay); **333** (wandering vs. homing); **398, 415** (recent research developments); **399, 415** (black salmon angling); **489** (hydrostatic tag); **492** (counting fence of net); **493, 525, 553, 562** (effect of forest spraying); **506** (size at parr-to-smolt stage); **507, 508, 509, 614** (best use of hatchery-raised); **529, 676** (regulation of fishery); **543** (identity of louse with Pac. salmon louse); **696** (muscle myogens separation); **708** (plasma steroid hormones); **745, 746** (management; maintenance); **747** (1500-mile migration); **856** (hormone assaying in plasma); **881** (avoidance of sublethal mining pollution)

SS 7 (adaptation to freshwater); **111** (Hudson Bay); **119** (James Bay area ouananiche); **204, 491, 650, 683, 853, 912, 991, 1027** (migration; homing); **521** (facts & theories); **617** (swim bladder development); **634** (Ont. landlocked form); **649** (life history); **651** (relative year-class strength); **654** (hatchery disease control); **681, 683, 994, 1291** (fishery & conservation); **690** (pituitary gland); **706, 908** (temperature preference mechanism); **738** (hepatogenesis); **743, 991** (fingerlings behaviour & survival); **767** (Lake Jesse, N.S.); **908** (response to electric stimuli); **917** (re-introduction to Lake Ontario); **967** (cycles); **969** (report of Co-ordinating Committee); **1030** (1949–54 catches); **1031, 1059, 1119, 1120, 1158, 1159, 1189, 1190, 1245, 1295, 1317, 1352** (research & managements reports); **1079** (commercial fishing re angling); **1118** (1955 scarcity survey); **1188** (river pollution problems); **1217** (past & future of); **1244** (behaviour); **1246** (effects of DDT on young); **1331** (ecology–ectology study); **1333** (territorialism); **1360** (questions & answers about); **1385** (hormones effect on sexual activity); **1388** (predation by mergansers)

Salmon, Atlantic (products) (*see also* Angling)

J 1: 179 (non-protein N flesh constituents); **7**: 94 (thiaminase in muscle & viscera); **12**: 641 (liver extracts & hydrolysates); **20**: 101 (muscle myogen)

B 7: 19 (insulin)

S 41 (bacteriology); **632** (commercial landings, 1910–1959); **677** (liver paste formula)

Salmon, Atlantic landlocked (*Salmo salar sebago*) (lake salmon; ouananiche)

S 173 (age); **280** (doubtful distinct subspecies)

SS 119 (James Bay area); **634** (Ont.); **840** (comparison with anadromous Atl. salmon)

Salmon, Biwa (*Oncorhynchus rhodurus*)

B 136: 9, 49 (osteology)

Salmon, black (*see* Salmon, Atlantic)

Salmon, blueback (as immature coho salmon, *see* Salmon, coho; as Columbia R. sockeye salmon, *see* Salmon, sockeye)

Salmon, chinook (biology) (*Oncorhynchus tshawytscha*) (king salmon; spring salmon; tyee salmon) (*see also* Salmon (inclusive Pacific species); Salmonidae; Trolling)

C 1915–16: 21 (scales & growth rate); **1:** 285 (feed of); **3:** 265, **4:** 455 (tagging); **4:** 471 (scale data re tagged returns for age)

J 6: 158 (diurnal fluctuations in upstream migration); **10:** 548 (deflection of migrating young); **11:** 310 (olfactory perception in migrating); **12:** 706 (water seepage rate through spawning beds); **15:** 573 (lethal hyperactivity), 607 (preferred temperature); **16:** 95, 429 (fatigue & mortality), 121 (size in New Zealand), 515 (marking experiments of Rich & Holmes), 721 (growth computation), 800 (*Sagitta* as oceanic indicator); **17:** 199 (critical size re maximum yield); **19:** 561 (ocean mortality rates estimations), 851 (seasonal feeding changes); **20:** 101 (muscle myogen species distinction), 287 (olfactory & visual responses); **21:** 255 (glycogen & lactate changes in migrating)

B 14: 15, **26:** 3, **41** (tagging); **32:** 41 (as game fish); **65:** 6 (feed of); **68:** 85, **68R:** 117 (full description); **84:** 6 (life history of Cowichan R.); **86** (falls as migration hazard, Skeena R.); **93:** 43 (predation by seals, Skeena R.); **113** (tagging review); **142** (B.C. fishery)

PRP 4: 11, **8:** 15, **62:** 3, **67:** 31, **73:** 56, **94:** 7, **106:** 10, **111:** 14 (tagging, marking & returns); **19:** 3 (predation by squawfish); **39:** 9, **42:** 22, **54:** 6 (angling); **42:** 3, **53:** 3, **55:** 10 (feed of); **44:** 9 (age in catches); **46:** 14 (sudden mass mortality); **72:** 36 (predation by seals); **90:** 21, **98:** 10 (olfactory perception in homing); **92:** 14 (deflecting emigrants); **95:** 53 (hourly migration rate up ladder); **101:** 12, **103:** 3 (trolling conditions)

CNG 14 (1948 catch prediction); **64:** 43 (productive capacity)

S 13 (tissue pentose compounds); **236** (age studies); **263** (scale patterns & counting methods); **322** (troll-caught); **356** (high dams re migration problems); **381** (transplantation to Lake Ontario & N.B.); **444** (repellent in mammal skin); **476** (new adenylsuccinic acid derivative in liver); **547** (Na & K variations in migrating); **695, 696** (muscle myogens separation); **806** (multiple hemoglobins); **851:** 22 (history & future prospects of fishery)

SS 7 (freshwater adaptation); **128** (growth); **395, 480** (feed of); **417** (white); **817** (lateral line development); **1208:** 78 (full description of freshwater stage)

Salmon, chinook (products) (*see also* Salmon (inclusive Pacific species) (products))

C 7: 505 (body oil hydrolysis)

J 5: 156 (fillet preservation); **6:** 119 (bacteria in stored muscle); **7:** 35, 74 (flesh protein nutritive value), 51 (flesh protein sulphur compounds), 137, 522 (flesh rancidity control); **11:** 57 (growth hormone from pituitary); **17:** 449 (nucleosides in muscle of iced); **18:** 349 (nucleoside phosphorylase from organs), 637 (separation of muscle proteins)

B 37, 59, 89 (oil characteristics & uses: *see* their indexes)

PRP 18: 5 (canning effect on oil); **37:** 7 (smoked); **40:** 14 (nitrite preservative effect on colour); **41:** 3 (canned smoked); **41:** 8 (red vs. white flesh nutritive value); **47:** 5, **50:** 16 (drip in thawed); **63:** 38 (pastes; correction on **65:** 66); **83:** 35 (retarding spoilage); **88:** 67, **108:** 21 (rancidity control); **94:** 3 (brine freezing); **95:** 39, **96:** 25, **100:** 2 (holding in chilled seawater; correction on **96:** 10); **98:** 3 (ribose content re heat-browning of flesh); **105:** 19 (Na & K content)

CVI 7 (delicatessen products); **11** (milt & roe essential amino acids)

CVG 23 (plastic film packaging of frozen)

S 37 (flesh pentoses); **375** (antibiotic ices for holding whole fish); **522** (liver nucleotides)

Salmon, chum (biology) (*Oncorhynchus keta*) (dog salmon) (*see also* Salmon (inclusive Pacific species); Salmonidae)

C 5: 32, 46 (Cultus L., B.C.)

J 8: 125 (fertility of stored eggs & sperm), 164 (physiological changes from fresh to salt water), 241 (seaward migration behaviour); **9**: 450 (population size factors); **10**: 300 (Cultus L.), 523 (responses to current); **11**: 63 (androgens), 69 (juvenile behaviour), 933 (oxygen supply to eggs; correction on **16**: 385); **12**: 362 (fry movements through impoundment), 369 (seaward migration), 706 (water permeability of gravel spawning beds); **13**: 309 (migration behaviour); **14**: 815 (reaction to light); **15**: 229 (oxygen deficiency effect on eggs; correction on **16**: 386); **15**: 251 (learning by fry), 391 (migratory behaviour of young), 797 (CO_2 effect on egg development), 805 (low temperatures resistance), 1103 (factors affecting production); **16**: 121 (growth at different salinities), 515 (summer & autumn runs on Amur R., U.S.S.R.), 553 (average weight in B.C. catches), 800 (*Sagitta* as oceanic indicator), 835 (survival & fecundity; correction on **17**: 943); **17**: 221 (NE Pac. distribution), 295, 655 (downstream migration); **18**: 401 (adaptation to seawater); **19**: 561 (ocean mortality rates estimations); **20**: 287 (olfactory & visual responses), 1441 (formalin shrinkage of specimens); **21**: 657 (unusually late spawner), 873 (host of *Caligus clemensi*), 905 (ocean growth & mortality), 1227 (ocean migrations)

B 14: 8, **31**: 10, **96** (tagging); **68**: 86, **68R**: 119 (full description); **84**: 12 (Cowichan R. system); **90** (B.C. fisheries); **94**: 6 (arctic & subarctic); **119** (relation to stream flow; tagging experiments)

PRP 3: 9, **9**: 12, **62**: 3, **85**: 79 (tagging, marking, & returns); **45**: 23 (fertilization efficiency); **54**: 9, **97**: 9 (age & size in commercial catches); **70**: 20, **77**: 105, **79**: 33 (natural propagation); **72**: 27 (counting fence); **78**: 3 (age from scales); **81**: 91 (hybridization with pink salmon); **93**: 7 (controlled stream production); **106**: 24 (early ocean residence); **108**: 27 (sodium arsenite toxicity to young)

CNG 13, 14 (1948 catch prediction); **52** (1958 age & sex composition of catches & escapements); **64**: 40 (productive capacity)

S 148 (fry predation by other fishes); **288** (natural propagation efficiency, Cultus L.); **383** (adult & fry collecting weir); **511** (stream ecology re production); **695, 696** (muscle myogens separation); **722** (distinguishing immature from mature, Gulf of Alaska); **806** (multiple hemoglobins); **851**: 20 (history & future prospects of fishery); **859** (scales & distribution, for distinguishing NE Pac. stocks)

SS 127 (embryology; fry); **205** (spawning efficiency); **964** (hormone effects on fry behaviour); **1000, 1042** (general; tagging); **1025** (Port John, B.C.); **1037** (tagging, Johnstone Strait); **1055** (Nile Creek); **1104, 1157** (planting in Jones Creek); **1208**: 80 (full description of freshwater stage)

Salmon, chum (products) (*see also* Salmon (inclusive Pacific species) (products))

J 5: 244 (preservative ices); **6**: 119 (bacteria in stored muscle), 303 (dehydrated flesh); **7**: 137 (flesh rancidity control), 552 (bacteriological peptones from flesh); **8**: 117 (extracts of organs as trout growth factors); **17**: 449 (nucleosides in muscle of iced); **18**: 349 (nucleoside phosphorylase from organs)

B 37, 59, 89 (oil characteristics & uses; *see* their indexes); **90**: 7 (various)

PRP 22: 15 (eggs for hatchery feed); **42**: 8 (eggs for bait); **42**: 10 (delicatessen products); **50**: 16 (thawing); **57**: 16 (dehydrated); **81**: 80 (mechanical fillet washer); **86**: 16 (canned cakes); **94**: 3 (brine freezing); **98**: 3 (ribose of flesh re browning on heating); **101**: 17, **105**: 19 (Na & K content); **102**: 22 (freshness test)

CVI 5 (smoked bacon-like product); **7** (delicatessen products); **11** (essential amino acids in milt, meals, stickwater, fingerlings); **16** (viscera by-products)

S 335 (kidney cobalamins); **695** (muscle myogens)

Salmon, coho (biology) (*Oncorhynchus kisutch*) (silver salmon) (*see also* Salmon (inclusive Pacific species); Salmonidae)

C 1915–16: 39 (life history); **1**: 285 (feed of); **3**: 277, **4**: 455 (tagging returns); **5**: 32, 46 (Cultus L., B.C.)

J 6: 158 (upstream migration diurnal fluctuations); **8**: 67 (fin clipping effect on fry swimming speed), 164 (physiological changes in fry transferred from fresh to salt water), 241 (seaward migration behaviour); **10**: 293 (Cultus L. & Sweltzer Creek), 523 (fry response to current); **11**: 69, **19**: 1047 (juvenile behaviour); **11**: 127, 310, 472 (odour perception), 590 (stock & recruitment), 681 (parasites), 933 (oxygen supply to eggs; correction on **16**: 385); **14**: 815 (reactions to light); **15**: 391 (migratory behaviour of young), 587 (cruising speed vs. temperature); **16**: 121 (growth at different salinities), 429 (fatigue & mortality in troll-caught), 800 (*Sagitta* as oceanic indicator), 869 (consumption of salmon fry by); **17**: 221 (NE Pac. distribution), 295, 665 (downstream migration), 323 (biochemistry of sexually maturing in aquarium); **18**: 1159 (underwater photography of fingerlings); **19**: 137 (visible migration of adults), 561 (ocean mortality rates estimations), 851 (seasonal feeding changes in B.C. waters); **20**: 101 (muscle myogen species distinction), 287 (olfactory & visual responses), 525 (resistance to a toxic substance), 1441 (formalin shrinkage of specimens); **21**: 335 ("milky" condition), 873 (host of *Caligus clemensi*)

B 14: 5, **15**, **40** (tagging); **32**: 42 (as game fish); **65**: 15 (feed of); **68**: 84, **68R**: 116 (full description); **84**: 8 (life history, Cowichan R.); **86** (falls as migration hazard); **113** (tagging review); **142** (B.C. fishery)

PRP 2: 7, **9**: 7, **47**: 19, **51**: 3, 8, **62**: 3, **73**: 56, **91**: 28, **94**: 7, **106**: 10, **111**: 14 (tagging, marking, & returns); **8**: 6 (Babine L.); **29**: 16 (age of commercial catch); **39**: 9, **42**: 22, **54**: 6 (angling); **49**: 6 (in commercial catches); **55**: 10 (feed of); **62**: 14 (Cowichan spawning run); **72**: 36, **104**: 15 (predators); **77**: 105, **79**: 33 (natural propagation); **78**: 3 (age from scales); **85**: 80 (growth comparison in 2 areas); **89**: 88 (Nile Creek population); **90**: 21, **98**: 10 (olfactory perception in homing); **93**: 30 (Lakelse L. emigrants); **95**: 53 (hourly migration rate up ladder); **101**: 12, **103**: 3 (trolling conditions); **106**: 14 (guiding fingerlings); **107**: 27 (early ocean residence); **112**: 7 (feed as growth factor)

CNG 13, 14 (1948 catch prediction); **64**: 41 (productive capacity)

S 81 (tissue creatine); **82** (tissue arginase); **148** (predator–prey relations); **231** (hatching conditions comparison); **236** (age studies); **263** (scale pattern & counting); **288** (natural propagation efficiency, Cultus L.); **322** (troll-caught); **381** (transplanting to Atl. coast); **444** (repellent in mammal skin); **494** (muscle nucleic acids); **511** (stream ecology re production); **547** (Na & K variations in migrating); **560** (DDT effects on young); **588** (alimentary tract radiography); **621, 622, 647** (inositol metabolism); **626** (biochemical changes in maturing); **695, 696** (muscle myogens separation); **708** (plasma steroid hormones); **851**: 25 (history & future prospects of fishery); **884** (hemoglobin patterns of young)

SS 535, 584 (swimbladder parasite); **717** (riddle of blueback); **831** (do small produce small?); **964** (hormone effects on fry behaviour); **965** (Moricetown Falls fishway tagging); **1208**: 76 (full description of freshwater stage)

Salmon, coho (products) (*see also* Salmon (inclusive Pacific species) (products))

C 7: 505 (body oil hydrolysis)

J 2: 463 (proximate analysis of canned), 473 (minerals of canned); **6**: 119 (bacteria in stored muscle), 303 (dehydrated flesh); **7**: 137 (flesh rancidity control); **10**: 69 (flesh preservatives); **17**: 449 (nucleosides in muscle of iced)

B 37, 59, 89 (oil characteristics & uses; *see* their indexes); **126**: 29 (changes when stored in refrigerated seawater)

PRP 15: 5 (body oil storage hydrolysis); **19**: 20, **41**: 17 (nutritive value of canned); **40**: 14 (nitrite effect on flesh colour); **50**: 16 (thawing); **52**: 24, **102**: 22 (quality tests); **56**: 7 (storage dehydration); **57**:

11 (nutritive value of fresh); 16 (dehydrated); **93**: 23: (aureomycin antibiotic stability in flesh); **96**: 25, **100**: 12, **104**: 7, 9, 16, 19 (effects of holding in chilled seawater); **98**: 3 (flesh ribose re browning by heat); **101**: 17, **105**: 19 (Na & K content); **104**: 9 (curd in canned)

CVI 5 (smoked bacon-like products); **7** (delicatessen products); **16** (viscera by-products)

S 81 (muscle creatine); **82** (arginine in organs); **162** (antirachitic value of canned); **375** (antibiotic ices for whole fish)

Salmon, dog (*see* Salmon, chum)

Salmon, Hudson Bay (*see* Char, arctic)

Salmon, humpback (*see* Salmon, pink)

Salmon, "jack" (precocious sockeye salmon)

PRP 75: 46 (% in commercial Skeena R. sockeye catch); **90**: 3, 9 (Babine R.)

Salmon, king (*see* Salmon, chinook)

Salmon, kokanee (*see* Kokanee)

Salmon, lake (*see* Salmon, Atlantic landlocked)

Salmon, landlocked (*see* Kokanee; Salmon, Atlantic landlocked)

Salmon, masu (*see* Masu)

Salmon, pink (biology) (*Oncorhynchus gorbuscha*) (humpback salmon) (*see also* Salmon (inclusive Pacific species); Salmonidae)

C 4: 455 (tagging returns)

J 2: 383 (upstream migration factors); **3**: 403 (spawning); **4**: 141 (transplants into Masset Inlet), 233 (maturity age; homing tendency); **6**: 217, **7**: 224 (characteristics, behaviour & propagation, McClinton Creek); **6**: 392 (gill raker & pyloric caeca counts); **8**: 241, **12**: 369 (seaward migration behaviour); **9**: 450 (population size factors); **10**: 300 (Cultus L.); **11**: 588 (stock & recruitment), 933 (oxygen supply in spawning beds; correction on **16**: 385); **12**: 706 (water permeability of spawning bed gravel); **13**: 309 (migration behaviour); **14**: 815 (reactions to light); **15**: 251 (fry learning), 391 (migratory behaviour of young), 787 (early investigations), 891 (variation in survival), 983 (Acanthocephala parasites), 1027 (production factors); **16**: 91 (3-year-old), 329 (variation in average weight), 800 (*Sagitta* as oceanic indicator), 835 (survival & fecundity; correction on **17**: 943); **17**: 221 (NE Pac. distribution), 295, 655 (downstream migration); **18**: 337 (aerial counts of spawning), 559 (kidney disease); **19**: 561 (ocean mortality rates estimation); **20**: 287 (olfactory & visual responses), 1441 (formalin shrinkage of specimens); **21**: 711 (blood sampling technique), 873 (*Caligus clemensi* host), 905 (ocean growth & mortality), 1019 (sea mortality rate), 1101 (growth rate for stages in life history), 1227 (ocean migrations), 1385 (redd superimposition & egg capacity of spawning beds)

B 14: 6, **31**: 3 (tagging); **66, 74** (migration); **68**: 82, **68R**: 114 (full description); **86** (Skeena R. falls as migration hazard); **90** (B.C. fisheries); **155**: 105 (transplantation to Atl. coast and survival there)

PRP 3: 8, **9**: 12, **15**: 10, **20**: 3, **22**: 17, **34**: 8, **48**: 13, **57**: 8, **58**: 8, **69**: 65, **85**: 79, **102**: 15 (tagging, marking, & returns); **10**: 5, **33**: 6 (investigations reports); **35**: 14, **41**: 6 (improving off-year runs); **45**: 23, **88**: 70 (reproduction efficiency); **72**: 27 (counting fence); **77**: 105, **79**: 33 (natural propagation); **81**: 91 (hybridization with chum salmon); **88**: 72 (drought mortality); **93**: 7 (controlled stream production); **96**: 22 (Queen Charlotte Is. cycles); **103**: 14, **111**: 18 (egg transplantation & returns); **106**: 24 (early ocean residence); **113**: 6 (adult behaviour), 8 (fry behaviour)

CNG 13, 14 (1948 catch prediction); **64**: 37 (productive capacity)

S 148 (fry predation by other fishes); **232** (natural propagation); **248** (length & weight vs. egg content); **257** (upstream migration factors); **263** (scale pattern & counting); **268** (return to parent stream from a distance); **288** (natural propagation efficiency, Cultus L.); **339** (even & odd

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C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sts.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

year populations); **383** (adult & fry collecting weir); **462** (new Hemiuridae parasite); **511** (stream ecology re production); **693** (repellent action of bear paws); **696** (muscle myogens separation); **708** (plasma steroid hormones); **710** (B.C. catch fluctuations); **711** (reproduction potentials re environmental variability); **712** (marine survival, distribution & migration); **713** (populations abundance regulation); **714** (populations dynamics concept); **842** (mortality aspects re marking); **851**: 16 (history & future prospects of fishery); **862** (migration & exploitation of 1959 Fraser R. runs)

SS 385, 1000 (B.C.); **437, 965, 1025, 1037, 1042** (tagging); **504, 505, 506** (eaten by caddis flies, water ouzel & muskrat); **858** (marine mortality); **965** (Moricetown Falls fishway); **1025** (Port John); **1037** (Johnstone Strait); **1055** (Nile Creek); **1104, 1105** (Jones Creek plantings); **1208**: 74 (full description of freshwater stage); **1384** (transplantation to Nfld.)

Salmon, pink (products) (*see also* Salmon (inclusive Pacific species) (products))

C 7: 505 (body oil hydrolysis)

J 2: 431 (oil characteristics & vitamins in canned), 439 (proximate analyses of canned); **5**: 38 (holding in sodium nitrite ice); **7**: 137 (flesh rancidity control); **17**: 449 (nucleosides in muscle of iced)

B 37, 59, 89 (oil characteristics & uses; *see* their indexes); **90**: 7 (various products)

PRP 11: 22, **13**: 13, **16**: 3, **19**: 20, **41**: 17 (nutritive values of canned); **41**: 3 (canned smoked); **45**: 19 (fillet drip); **84**: 68 (oil vs. water content); **99**: 6 (offal oil fatty acids); **102**: 15 (tag found in canned); **104**: 19 (salt penetration from chilled seawater); **105**: 19 (Na & K content)

CVI 11 (essential amino acids in offal meal, viscera & stickwater); **16** (viscera by-products)

S 162 (antirachitic value of canned)

Salmon, red (*see* Salmon, sockeye)

Salmon, silver (*see* Salmon, coho)

Salmon, sockeye (biology) (*Oncorhynchus nerka*) (blueback salmon; kickininee; red salmon) (*see also* Salmon (inclusive Pacific species); Kokanee; Salmonidae)

C 1917–18: 32 (predation by sea lions), 105 (freshwater rearing); **1**: 285 (feed of); **2**: 151 (scale growth rate), 335 (ecology); **3**: 265, **4**: 467 (tagging); **5**: 1, 37, 55, **8**: 345 (life history & propagation, Cultus L.); **8**: 72 (new species of parasite)

J 2: 311, **3**: 399, 450, **10**: 314 (life history, propagation, feed, environment; Cultus L.); **3**: 26 (sea survival, sex proportions, upstream migration), 421 (temperature re seaward migration), 469 (flesh pigments); **4**: 151 (natural vs. artificial propagation), 184 (lake mortality trend), 192, **16**: 897 ("residual" & kokanee in Cultus L.); **5**: 293, 315 (lake predation & predator reduction); **6**: 267 (lake population density re fry size), 483 (stocking by egg transfer); **7**: 88 (encouraging landlocked to sea run); **8**: 82, 103, 178 (environment & survival, Skeena R. & Lakelse L.), 453 (Skeena R. escapement & distribution); **9**: 265, **15**: 607, 805 (water temperature preferences & tolerances); **11**: 69, **15**: 251, 391, **17**: 295, 655 (fry & juveniles behaviour & emigration); **11**: 399 (smolt migration re adult return), 681 (parasites), 988 (sex ratios); **12**: 93 (helminth parasites in smolts), 178 (phototaxis & pigmentation after pineal injury), 451 (Skeena R. fishery), 706 (water seepage rate through spawning beds); **13**: 695, **15**: 961 (abundance & distribution, Babine L. area); **14**: 783, **15**: 559 (effects of pulpmill wastes on); **14**: 807 (blood lactic acid after exercise), 815 (reactions to light); **15**: 331 (age at maturity), 573 (hyperactivity & death), 587 (cruising speed re temperature), 867 (Rivers Inlet population & fishery), 891 (variation in survival), 983 (Acanthocephala parasite in), 1007 (Skeena R. spawners re catch); **16**: 121 (growth at different salinities), 235, 421, 559, **17**: 113, 125, 347, 565 (Nos. 5, 6, 8, 9, 10, 11 & 13 in a series on biochemical changes during spawning migration; corrections on **16**: 930, 931, **17**: 943); **16**: 800 (*Sagitta* as oceanic indicator); **17**: 221, **19**: 531, 561, **21**: 1227 (NE Pac. oceanic distribution, growth, mortality, migrations); **18**: 311 (oceanographic effects on spawning migration), 321 (rigor biochemistry), 1159 (underwater photography of); **19**: 137 (visible migrations of adults), 327, **20**: 1457 (olfactory perception of food extracts); **19**: 619 (blood *p*H re mortality), 1025, **21**: 1183 (respiratory metabolism); **20**: 95 (survival following advanced gonad development; correction on **21**: 1553), 101 (muscle myogen species differentiation), 919 (young migration through complex lake system), 1371 (maximum yield; correction on **21**: 1554); **20**: 1435 (general anaesthetic for), 1441 (formalin shrinkage of specimens); **21**: 255 (changes in glycogen & lactate in migrating), 485 (homing to tributary), 653 (fatty oxidation by tissues), 711 (blood sampling technique), 1183 (respiratory metabolism re swimming speed), 1227 (ocean migrations), 1329 (stock size & resultant production, Skeena R.)

B 14, 3, **16**, **26**: 11, **27**: 9 (tagging); **32**: 42 (as game fish); **50** (artificial spawning); **53** (propagation); **55**: 33 (predation by mergansers); **56**: 29 (Okanagan L.); **68**: 88, **68R**: 120 (full description); **84**: 13 (Cowichan R.); **86** (falls as migration hazard, Skeena R.); **101**, **106** (effects of Babine R. rockslide & its removal); **119** (population estimates; reproduction curves)

PRP 2: 3, 5, **5**: 11, **7**: 14, **25**: 18, **46**: 19, **61**: 8, **62**: 4, **65**: 77, **70**: 13, **71**: 11, **75**: 40, **81**: 92, **87**: 37 (tagging, marking, & returns); **8**: 6, **78**: 6 (Babine L.); **9**: 36, **10**: 10 (pond culture); **14**: 5, **16**: 10 (hatchery practices); **18**: 3, **32**: 21, **36**: 20, **72**: 36 (predators & their removal & control); **21**: 14 (plankton as feed); **36**: 3 (growth rates); **43**: 14 (Lakelse L. run); **45**: 23, **77**: 105, **79**: 33, **80**: 55, **104**: 34 (natural propagation); **74**: 6 (Morrison L.); **75**: 31 (Smith Inlet), 46, **90**: 3, 9 ("jacks"); **78**: 3 (scale age); **82**: 9 (Rivers Inlet & Smith Inlet runs), 16, 17 (egg content); **88**: 60, **90**: 9 (effect of Babine R. rockslide); **91**: 13 (egg & fry survival), 17 (estimating size of smolt run), 21 (smolt age, weight & length); **93**: 30 (Lakelse L. emigrants); **94**: 5 (Skeena R. seasonal exploitation); **99**: 24, **106**: 14 (guiding fingerlings); **99**: 30 (emigrant smolt size); **102**: 16 (age, size & weight, Bella Coola); **106**: 24 (early ocean residence); **112**: 6 (hormones re spawning migration)

CNG 52 (1958 age & sex composition in catches & escapements); **64**: 34 (productive capacity)

S 42 (olfactory sense re migration); **67** (temperature, *p*H & oxygen, re adult migration); **77**, **90**, **91**, **92**, **107**, **113**, **115**, **118**, **122**, **134**, **145**, **179**, **195**, **219**, **233**, **328**, **342**, **362**, **396**, **422**, **465**, **501** (Nos. 11–25 & 36–42 in a series of contributions to life history & data re B.C. fishery); **84** (propagation re conservation); **98** (feed & enemies); **124** (importance of copepods in natural diet); **127** (natural vs. artificial propagation); **144** (description in freshwater); **202** (Acanthocephala parasites); **237** (origin of kokanee); **248** (length & weight re egg count); **287** (culture problems re conservation); **288** (natural propagation efficiency, Cultus L.); **295** (production computation); **356** (high dams re migration problems); **391** (freshwater survival); **503** (environmental stress implications & assessment); **520**, **536**, **537**, **539**, **573**, **605**, **626** (Nos. 1, 2, 3, 4, 7, 12 & 14 of a series on biochemistry of changes during spawning migration); **547** (Na & K variations in migrating); **564**, **573**, **604**, **620**, **636**, **664**, **665**, **668**, **692**, **708** (plasma hormones); **588** (alimentary tract radiography); **666**, **846** (olfactory perception re homing); **695**, **696** (muscle myogens separation); **722** (distinguishing immature from mature, Gulf of Alaska); **764** (ecology aspects); **770** (steroid hormones metabolism); **776** (blood & testes testosterone in spawned); **806** (multiple hemoglobins); **817**, **859** (parasite as indicators of N Pac. origins); **818** (traced incorporation of N bases into milt); **819** (oil fatty acids distribution re metabolism); **832** (fatty acid oxidation by muscle); **849** (milt extract synthesis of ribomononucleotides); **851**: 10 (history, catches & prospects of B.C. fishery); **859** (tagging & parasites for distinguishing NE Pac. stocks); **884** (hemoglobin patterns of young)

SS 25 (coloration); **38** (life history; fishery); **92**, **114**, **130**, **152**, **167**, **197**, **228**, **248**, **264**, **279**, **730**, **741**, **756**, **771**, **796**, **811**, **824**, **848**, **880**, **903** (Nos. 1–10

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

& 26–35 of a series of contributions to life history & data re B.C. fishery); **175, 806, 834** (Hell's Gate, Fraser R.); **176** (adults as feed for young); **223, 400, 614, 615** (parent stream theory); **224** (growth of young); **364, 611** (conservation); **365** (Nass R.); **369, 410, 427, 482, 583, 590, 613, 614, 722, 797** (propagation); **370** (reactions to power dam); **371, 614** (Cultus L.); **479, 611, 612, 613, 622, 645** (predators & their control); **532** (maturity age); **568** (spawning migration behaviour); **583, 590, 1022** (natural vs. artificial propagation); **614, 615, 806, 965** (marking & tagging, & returns); **843** (trap for young migrating); **919, 1399** (cyclic dominance); **965** (Moricetown Falls fishway, Skeena R.); **1008** (Babine R. smolts); **1048** (Lakelse L.); **1198** (muscle non-protein N during spawning migration); **1208**: 81 (full description of freshwater stage); **1216** (spawning migration energy expenditures); **1258** (egg mortality in gravel); **1305** (oceanographic variables re migration & survival); **1323** (oxygen uptake re swimming speed of young)

Salmon, sockeye (products) (*see also* Salmon (inclusive Pacific species) (products))
C 8: 265 (liver oil vitamin A)
J 2: 431 (oil characteristics & vitamins of canned), 439 (proximate analyses of canned); **3**: 469 (flesh pigments); **4**: 162 (firmness of canned); **5**: 428 (body, liver & intestinal oils); **6**: 109 (egg oil essential fatty acids); **7**: 513 (flesh protein amino acids); **12**: 85 (economics of catch & prices); **16**: 235, **17**: 113 (body cholesterol, fat & protein); **16**: 421 (nucleic acids in tissues), 559 (testes androgens); **17**: 125 (blood plasma constituents), 347 (free histidine in tissues), 565 (phosphorus, creatine & inositol in tissues); **18**: 321 (muscle changes re rigor), 349 (nucleoside phosphorylase from organs); **21**: 37 (storage in ultraviolet-irradiated refrigerated brines)
B 37, 59, 89 (oil characteristics & uses; see their indexes); **126**: 29 (changes during holding in refrigerated seawater)
PRP 11: 22, **13**: 13, **16**: 3, **19**: 20, **41**: 17 (nutritive values of canned); **21**: 10, **104**: 9 (curd in canned); **28**: 18, **99**: 68 (offal oil); **32**: 4 (vacuum in canned); **63**: 38 (pastes; correction on **65**: 66); **69**: 66 (protein value of cannery scraps); **100**: 15 (flesh colour fading during canning); **101**: 17, **105**: 19 (Na & K content); **104**: 9, 16 (holding in ice or chilled seawater)
CVI 11 (essential amino acids of flesh, wastes, meal & stickwater); **16** (viscera by-products)
MSP 4 (nature of glass-like crystals in canned); **5** (nature of "curd" in canned)
S 162 (antirachitic value of canned); **335** (kidney cobalamins); **504** (predicting colour after canning); **536** (spawning migratory flesh composition); **851**: 5 (data re canned, 1895–1962)

Salmon, spring (*see* Salmon, chinook)

Salmon, steelhead (*see* Trout, steelhead)

Salmon, tyee (*see* Salmon, chinook)

Salmon-lice (*see also* Amphipoda; Copepoda, parasitic)
C 1917–18: 171, **5**: 423 (on Atl. salmon); **5**: 80 (on Pac. salmon)
J 5: 172, **6**: 24 (on Atl. salmon); **7**: 187, **8**: 207, **18**: 441 (on trout); **11**: 673 (on B.C. trout)
S 543 (on Atl. & Pac. salmons)
SS 193, 660 (on B.C. trout)

Salmonellosis
PRP 106: 8 (as food poison, & prevention)

Salmonidae (*see also* Char; Kokanee; Trout; Salmon)
J 18: 679 (osteology & phylogeny); **20**: 101 (species differences based on muscle protein components); **21**: 255 (changes in glycogen & lactate in migrating), 1535 (osmoregulatory adaptation to seawater)
B 68: 105, **155**: 101 (key to)
PRP 30: 9 (hooked snout development)
SS 135 (flesh pigment); **598** (scale pattern origin); **765** (scale pattern & counting methods); **817** (lateral line development); **891** (Cowichan L., B.C.); **1208**: 52 (description of, B.C.)

Salpa (*see* Thaliacea)

Salt, common (*see also* Brines; Cod, Atlantic (salted); Composition, chemical: Herring, salted; Marinating; "Reddening"; Salt fish)

J 6: 1 (from various sources: analyses & use for salting fish); **13**: 183, 195 (halophilic bacteria in)

B 29 (control of bacteria on halibut); **112** (types for salting Atl. cod)

PRA 4: 5, **44**: 15, **50**: 9 (sterilizing); **45**: 14, **60**: 3 (staining of fish from impurities in); **55**: 7 (storing to destroy halophilic bacteria)

PRP 7: 3 (halibut yellowing deterrent); **94**: 3 (penetration during brine freezing); **101**: 17 (in canning, re low-salt diet); **104**: 19 (penetration into fish held in chilled seawater)

CHN 4 (determination in salted fish)

CVI 15 (effects on nutritive factors)

NSB 7 (production & composition of commercial)

SS 647 (effect of quality on product); **757** (determination in presence of protein); **1151** (fate of halophilic bacteria in stored) **1152** (salt tolerance of halophilic bacteria); **1233** (effect of salt on cod decomposition); **1410** (freshwater fish)

Salting (*see* Canning; Cod, Atlantic (salted); Herring, salted; Marinating; Salt, common; Salt fish; Smoking; *also* other cognate subjects, including names of fishes)

Salts, metal (*see* Mineral constituents; Salt, common; *also* names of elements)

Salvelinus

B 94: 7 (arctic & subarctic distribution)

S 551 (re *Oncorhynchus* origin & speciation)

Salvelinus alpinus (*see* Char, arctic)

Salvelinus alpinus malma (*see* Dolly Varden)

Salvelinus fontinalis (*see* Trout, brook)

Salvelinus malma (*see* Dolly Varden)

Salvelinus namaycush (*see* Trout, lake)

Salvelinus namaycush namaycush; S. namaycush siscowet (two lake trout subspecies)

J 19: 39 (physical characteristics & chemical composition, Lake Superior)

Sambro Lightship (*see* Lighthouse and lightship oceanographic stations, Atlantic coast)

Sampling (theory) (*see also* Statistical methods)

J 4: 19 (pelagic net plankton of a lake); **10**: 238 (plankton); **15**: 19 (sampling error in population estimates); **21**: 13 (catch of a research vessel)

B 76 (*Triaenophorus* incidence in whitefish); **119**: 39, 187 (discussion of)

S 158 (plankton)

SS 621 (weight of fish in ponds); **915** (stratified subsampling for age); **918** (sequential analysis)

Sampling devices and methods (*see also* Sampling (theory))

C 6: 417, 423 (bottle, for seawater bacteria)

Salt fish (*see also* Brining; Cod, Atlantic (salted); Drying of fish; "Dun"; Haddies; Herring, salted; Marinating; Moulds; "Reddening"; Salt, common)

J 6: 1 (suitability of salt from various sources), 380 (drying of heavily salted); **13**: 183, 195 (halophilic bacteria); **15**: 543 (drying by thermocouple control); **20**: 997 (icing to cool)

B 9, 112 (processing of); **11**: 24 (theory of salting); **59**: 425 (changes in oil of)

PRA 18: 7 (nature of preservation); **20**: 8, 10, **35**: 26, **47**: 5, **62**: 3 (drying & moisture determination methods); **30**: 8 (salting by weight); **35**: 26 (dryer construction); **45**: 14, **60**: 3 (staining by impure salt); **47**: 10 (plant clean-up & disinfection); **49**: 7 (storage & transport conditions); **56**: 17 (chilling during processing); **62**: 7 (splitting table), 38 (automatic washer)

CHN 4 (NaCl determination); **5** (bibliography, principally re salted Atl. cod); **12** (accelerated cooling method)

NSB 4 ("pink" discoloration)

S 742 (salting problems); **370** (review of microbiological discoloration & spoilage)

SS 642 (storage & transport); **757** (NaCl determination); **1114** (Ceylon);

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 10: 238, **13**: 59, **21**: 639 (plankton); **11**: 933 (gravel & water in a spawning bed); **15**: 909 (juvenile herring); **20**: 13 (catch on a research vessel), 1549 (modified Petersen grab for benthic sampling)
PRA 60: 15 (salt cod for analysis)
PRP 95: 59 (for seabottom character)
CFI 2 (canned fish)
S 355 (seawater bottle); **654, 655, 656, 657, 658, 769, 859** (Pac. salmons on high seas); **777** (improved tripper for plastic seawater sampler)

Sanborn, Joseph Raymond
S 102 (bacterial fish decomposition); **114** (fresh fish marine bacteria)

Sand flea (*see* Amphipoda; Flea, sand)

Sand clam (*see* Clam, sand)

Sand lance (in addition to following species, *see* Sandlance, Pacific)

Sand lance, American (*Ammodytes americanus*) (sand eel; sand launce)
C 1902–05: 84 (N.S.), 91 (trematode parasites); **1918–20**: 111 (off N.S.)
J 15: 1383 (as cod feed); **16**: 827 (Miramichi Bay, N.B.)
B 155: 272 (full description)
S 234 (P.E.I.)
NRB 4: 15 (Nfld.)

Sand lance, Greenland (*see* Sand lance, northern)

Sand lance, northern (*Ammodytes dubius*) (Greenland sand lance)
C 8: 23 (Hudson Bay)
J 9: 112 (Ungava Bay)
B 155: 273 (full description)
SS 119 (James Bay)

Sand lance, Pacific (*see* Sandlance, Pacific)

Sanddab, mottled (*Citharichthys sordidus*) (Pacific dab; Pacific sanddab)
J 8: 375 (dispersion & growth, B.C.)
B 68: 308, **68R**: 180 (full description)
PRP 40: 3 (key relation to flatfishes); **62**: 10 (common names); **68**: 43 (liver, liver oil & vitamin A)
CNG 4 (common names)
CNS 1–11 inclusive, 13 (B.C. trawl catches by areas, 1945–63)
CVI 8 (liver oil & vitamin A)
S 290 (W coast Vancouver Is.)

Sanddab, Pacific (*see* Sanddab, mottled)

Sanddab, speckled (*Citharichthys stigmaeus*)
C 8: 99 (intermediate host of a cestode)
B 68: 309, **68R**: 181 (full description)
PRP 40: 3 (key relation to flatfishes)
S 290 (B.C. range extensions)

Sandeman, Edward John
J 15: 695 (red-fleshed redfish pigment spectrum); **16**: 763 (redfish caudal pigmentation)
PRA 66: 20 (redfish varieties); **67**: 26 (redfish growth)
S 731 (*Sebastes* age & growth-rate problems); **786, 793** (ICNAF reports on measurement of trawl-net meshes); **877** (redfish tagging)
SS 1195 (young redfish growth)

Sandfish (*Trichodon trichodon*)
B 68: 155, **68R**: 215 (full description)

Sandlance (in addition to following entry, *see* Sand lance)

Sandlance, Pacific (*Ammodytes hexapterus*) (*A. tobianus personatus*)
J 15: 909 (characteristics of schools)
B 68: 159, **68R**: 395 (full description)
PRP 42: 3, **47**: 14, **53**: 3, **55**: 10, **79**: 35, **95**: 35, **100**: 19 (as feed of salmon & other fishes)
S 290 (B.C. records)

Sandpiper, semipalmated (*Ereunetes pusillus*)
SS 920 (in NW N.B.)

Sandstrom, J. W.
SS 183 (Canadian Fisheries Expedition Atlantic Ocean hydrodynamics)

Sandworm (*Neanthes virens*) (*Nereis virens*)
J 9: 458 (taxonomy)
B 115: 2 (as bait)
PRA 58: 11 (Maritimes industry for bait)

Sanitation of fishing vessels (*see also* Disinfectants; Holds)
J 12: 329, **13**: 21, 207, 291, 861, **16**: 223, **18**: 295 (a series re spoilage of Atl. fishes on vessels at sea)
B 12: 12 (chlorine for boats); **20**: 11 (chlorine, formaldehyde); **49**: 2 (formaldehyde); **100** (practices for)

PRA 6: 3 (ice for fish on vessels); **55**: 17, 24 (fish stowage at sea); **58**: 27 (to avoid "bilgy" fish); **62**: 32 (handling fish on trawlers)
PRP 6: 3, **59**: 7, **62**: 12 (bactericidal & fungicidal sprays)
CGR 10 (general)
CHN 1 (at sea)

Sanitation of plants and processing equipment (*see also* Disinfectants; Washing)
J 20: 1231 (fresh fish washing)
B 112 (salt fish processing)
PRA 13: 5 (lobster canneries); **27**: 3, **39**: 3, **40**: 9, **47**: 10, **56**: 5, 10, **66**: 13, **67**: 23 (plant & equipment); **35**: 20, **36**: 10 (cutting & filleting tables); **36**: 14 (water supply); **40**: 9, **66**: 13 (chlorination); **52**: 28 (to avoid salt fish "reddening"); **60**: 4 (for "dun" control)
CFI 11 (scallop meat shucking & handling); **17** (clam shucking plant); **22** (plant program & rules for)
CGR 10 (general)
CHO 12, 16 (lobster canning); **31** (fish canning); **37** (maggot infestation prevention)
CHN 1 (with fish in boats at sea)
NSB 9: 6 (salt cod processing)
SS 258 (lobster canneries); **709, 768** (Atl. coast); **873** (filleting tables)

Saponification of oils (*see also* Methanolysis; Oils and fats; Soap)
J 6: 103 (activities of free vs. esterified vitamin D)
B 59, 89 (marine animal oils; *see* their indexes)
PRP 38: 14, **50**: 8 (in vitamin A concentrating); **75**: 48 (whitefish oil saponification value)
CVI 9, 12, 13 (saponification value of freshwater fish oils)

Saprolegnia (*see* Fungus)

Sarcina (red halophilic bacteria)
J 13: 183, 195 (inhibition by bile)

Sarda chiliensis, S. lineolata (*see* Bonito, Pacific)

Sarda sarda (*see* Bonito, Atlantic)

Sardine (Atlantic) (young Atlantic herring) (*see also* Herring, Atlantic)
C 1901: 60 (industry re herring fishery); **1917–18**: 181 (bacteriology of swelled canned); **1918–20**: 99 (putrefaction rate of fresh), 103 (cause of swelled cans)
J 7: 62 (*Clostridium* growth in canned)
PRA 8: 6 (re salmon angling); **11**: 14 (digestion period); **34**: 17 (fatness)
CFI 13 (canning operations); **16, 26** (canning in tomato sauce)
S 346 (Passamaquoddy Bay fishery); **349** (oil unsaturated fatty acids); **455** (quality prior to canning)
SS 160, 206 (bacteriology of swelled canned); **181** (age & growth); **494** (river discharge effects on movements); **955** (trawling for)

Sardine, Pacific (young pilchards) (California sardine) (*see* Pilchard)

Sardinops caerulea, S. sagax (*see* Pilchard)

Sargassum muticum (*see* Japweed)

Sargassumfish (*Histrio histrio*) (*H. pictus*)
B 155: 423 (occurrence off Maritimes)
S 203 (off N.S.)

Sars, George Ossian
C 1911–14(II): 221 (Georgian Bay Entomostraca)

Saskatchewan (*see also* names of individual localities and of freshwater fishes)
J 2: 209 (*Chironomus* midges, larval & adult)
SS 358 (fishing investigations & industries)

Sauer, Charles Douglas
J 21: 647 (bathythermograph card processor)

Sauger (*Stizostedion canadense*) ("pike perch")
C 1: 439 (northern Man.)
J 15: 607 (preferred temperature & depth); **16**: 131 (Lake Winnipeg commercial fishery)
B 81: 3 (Lake Manitoba: characteristics)
CNG 64: 64 (productive capacity)

SS 358 (Prairie Provinces industry); **855** (growth rate, Lake Manitoba)

Saunders, John Wilfred
J 12: 238 (American eel in Maritimes freshwaters); **15:** 1403 (brook trout movements in fresh & salt waters); **17:** 453 (impoundment effects on P.E.I salmon)
S 384 (P.E.I. stream electrofishing); **419** (P.E.I. trout standing crops); **435** (trout counting fences operational efficiency); **709** (improved brook trout production); **779** (brook trout transplantation); **868** (planting brook trout in estuaries)

Saunders, Leslie Gale
C 8: 243 (Vancouver Is. freshwater amphipods)
S 69 (B.C. marine insects)

Saunders, Richard Lee
J 20: 373 (Atl. cod respiration); **21:** 27 (young Atl. salmon movements)
S 663, 698 (fish gills irrigation mechanism); **881** (Atl. salmon avoidance of pollution)

Saur, Jesse Francis Theodore
SS 1047 (Bering & Chukchi Seas physical oceanography)

Saury, Atlantic (*Scomberesox saurus*) (billfish; needlefish; skipjack; skipper)
C 1902–05: 83 (N.S.); **1918–20:** 110 (Cape Breton)
J 16: 818 (Miramichi Bay)
B 155: 167 (full description)
CNG 64: 28 (productive capacity)
S 234 (P.E.I.)

Saury, Pacific (*Cololabis saira*)
J 20: 1551 (oil fatty acids)
B 68: 123, **68R:** 158 (full description)
PRP 105: 16, **107:** 11 (NE Pac.)
CNG 64: 50 (abundance offshore B.C.)
S 851: 57 (possible B.C. resource)

Sausage and sausage-like fish products (*see also* Delicatessen)
PRP 72: 33 (from B.C. herring)
CCG 4: 10 (from freshwater fishes); **6:** 17 (from whitefish)
CVI 7 (from salmon trimmings)
SS 1292, 1345 (from freshwater fishes)

Sawbelly (*see* Alewife)

Sawdust (*see* Pollution)

Sawpalate, stout (*Serrivomer beani*) (short-nosed snipe eel)
B 155: 159 (full description)

Sawtailfish, ribbon (*Idiacanthus fasciola*)
B 155: 135 (full description)

Sawyer, Margaret Elizabeth (*see also* MacKay, Margaret Elizabeth)
C 7: 439 (skate skin extractives physiological effect), 477 (spiral intestine movements in elasmobranchs)
J 1: 239 (skate stomach innervation)

Sawyer, William Reginald
C 7: 73 (pure water & seawater spectral absorption)
S 105 (E Canada astrophysical data)

Saxidomus giganteus (*see* Clam, butter)

Scabbardfish, black (*Aphanopus carbo*)
J 20: 273 (3 W Atl. records)
B 155: 277 (full description)

Scad (Pacific) (*see* Mackereljack)

Scad, bigeye (*Selar crumenophthalmus*) (goggle-eyed jack or scad; goggler)
C 1902–05: 85 (Canso, N.S. as *Trachurops* sp.)
B 155: 255 (full description)

Scad, goggle-eyed (*see* Scad, bigeye)

Scad, mackerel (*Decapterus macarellus*)
C 1902–05: 85 (N.S.)
B 155: 249 (full description)
S 235 (Halifax Harbour)

Scagel, Robert Francis
B 127 (B.C. marine plant resources)
CNG 17: 2, 5, 14, 17, 21, 23 (albacore scouting, fishing, feed, tagging, age, body temperature)
SS 835 (marine plants, Hardy Bay, B.C.)

Scales (*see also* Scales, age determination from)
J 5: 440 (regeneration in Atl. salmon); **6:** 245 (counts of *Salmo gairdnerii*); **7:** 563 (amino acids of Pac. herring); **16:** 903 (counts re cutthroat trout subspecies); **17:** 913 (collagen in Pac. herring); **21:** 1267 (as basis for key to Pac. salmons)
B 68: 14, **68R:** 21, **155:** 17 (characteristics)
PRA 73: 9 (guanine from)

PRP 37: 19 (% of B.C. herring weight); **55**: 18 ("pearl essence" from B.C. herring); **71**: 5 (various uses); **77**: 114, **78**: 16 (descaling equipment)

CNG 3 (potential yields from B.C. herring for products, e.g. "pearl essence")

CVI 11 (essential amino acids in B.C. herring)

S 157 (development in *Salmo* trouts); **263** (pattern & counting methods re Pac. salmons & trouts); **654, 655, 656, 657, 658, 769, 859** (re NE Pac. salmon stocks)

SS 127 (development; use in species identification); **405** (temperature re number on trout); **580** (re religious aspects of fish as food); **598, 765** (development; pattern on salmonids); **715** (histology & regeneration)

Scales, age determination from

C 1914–15: 87 (Atl. hake), 95, **3**: 431, **6**: 282 (haddock); **1914–15**: 103, **4**: 287 (Atl. cod); **1915–16**: 21, **4**: 471 (chinook salmon); **1915–16**: 42 (coho salmon); **1917–18**: 109, **2**: 153, **5**: 18, 74 (sockeye salmon); **1917–18**: 111 (pollock); **8**: 253 (Kamloops trout)

J 2: 379, **5**: 440 (Atl. salmon); **4**: 302 (brook trout); **5**: 337 (Rocky Mountain whitefish); **8**: 345, **10**: 413, **13**: 547 (whitefish); **12**: 35 (B.C. albacore), 742, **14**: 203 (*Salmo gairdnerii*); **13**: 449 (Atl. herring); **14**: 573 (kokanee); **15**: 295 (capelin), 1239 (haddock; correction on **16**: 929); **15**: 1313 (Atl. smelt); **16**: 91 (pink salmon); **19**: 1175 (young sablefish); **20**: 491 (lake trout), 1397 (bigmouth buffalo); **21**: 1267 (5 Pac. salmon species)

B 1: 21 (plaice); **21**: 19 (Atl. salmon); **25**: 16 (haddock); **31**: 4 (pink & chum salmon); **68**: 15, **68R**: 22 (general); **111**: 8 (Atl. herring); **144**: 6, 54 (Atl. smelt)

PRA 1: 10 (haddock); **2**: 18 (Atl. salmon)

PRP 18: 10 (B.C. herring); **29**: 16 (coho salmon); **40**: 17 (eulachon); **73**: 53 (exhibit); **78**: 3 (Pac. salmons & steelhead trout); **91**: 21 (sockeye salmon smelts)

CCG 4: 1 (apparatus for)

CJG 2, 4 (haddock); **3** (redfish)

CNG 52, 63 (B.C. herring)

NRB 1: 18, **13**: 13 (Atl. salmon); **2**: 21, **17**: 87 (capelin); **6**: 26 (haddock); **14**: 55 (Atl. cod)

S 157 (*Salmo* trouts); **173** (landlocked Atl. salmon); **213**: 392 (yellow & white perch); **236** (coho & chinook salmon); **244** (modified projector for); **293** (development of methods); **731** (redfish)

SS 72, 93 (B.C. salmons); **94** (B.C. halibut); **127, 172** (various fishes); **153** (Atl. herring); **169** (American plaice); **634** (Ont. landlocked Atl. salmon)

Scaling (*see* Descaling equipment)

Scallop, Iceland (*Chlamys islandicus*)

B 135 (Nfld. survey); **145** (biology & Maritimes fishery)

Scallop, Pacific (*Pecten caurinus*)

S 245 (description; edibility); **433** (new sterol in)

Scallop, rock (*Hinnites giganteus*)

S 245 (description, B.C.)

Scallop, sea (*Placopecten magellanicus*) (*P. grandis; Pecten grandis*; bay, Digby, giant or smooth scallop) (*see also* International Commission for the Northwest Atlantic Fisheries)

C 1906–10: 239 (larvae recognition)

J 7: 96 (thiaminase in); **11**: 660, **12**: 797 (Bay of Fundy: growth rate, abundance); **15**: 1142 (investigations review), 1189 (temperature resistance); **19**: 877 (re Passamaquoddy tidal power project); **20**: 451 (mass mortality causes); **21**: 813 (storage life after gamma irradiation), 1035 (muscle sterols seasonal variations), 1543 (sterols chromatographic identification)

B 75 (occasional toxicity); **119**: 156, 197 (growth; stock estimates); **135** (Nfld. survey); **145** (biology; Maritimes fishery)

PRA 1: 5 (meat preservation); **4**: 8 (Bay of Fundy resource); **5**: 10 (shipping frozen meat); **11**: 10 (growth rate); **12**: 7 (canning); **14**: 14 (handling of shucked); **44**: 6 (meat yield re size); **45**: 3 (dark meat & shell disease); **49**: 14 (Digby abundance changes); **52**: 9 (drag mesh re legal size); **54**: 12 (monthly catch variations);

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70: 31 (recent fishery trends); **71**: 21 (stocktaking of Maritimes resource)
CFI 11 (shucking; meat handling)
CJG 5, 6 (Nfld. investigations, 1957–58)
CNG 64: 24 (productive capacity)
CSG 22 (inshore fishery; processing); **25, 30** (offshore exploration, 1953, 1954, 1957); **33** (Georges Bank fishery); **35** (1961 Gulf of St. Lawrence exploration)
S 100 (adductor mechanism); **805** (fatty acids specific distribution); **879** (sterol isolation from)
SS 867 (sea temperature affects catches); **1111** (environment re fishery); **1210** (sea temperature re survival); **1234** (selectivity by Canadian draggers)

Scallops (Atlantic in general)
PRA 45: 3 (dark meat & shell disease); **52**: 9 (drag mesh re legal size); **71**: 21 (resource stocktaking)
S 100 (adductor mechanism of various species)
SS 119 (James Bay)

Scallops (Pacific in general)
S 245 (length of *Pecten* species)

Scandinavia
SS 627 (fisheries biology & culture)

Scaphopoda
C 1917–18: 245 (Canadian)
S 623 (arctic)

Scarratt, David Johnson
J 20: 1067 (underwater observation of Atl. herring spawning); **21**: 661 (lobster larvae abundance)

Scattergood, Leslie Wayne
J 15: 1451 (Bay of Fundy larval herring distribution; correction on **17**: 943)
B 121 (NW Atl. herring fishery)

Scattering layer (*see* Sound-scattering layer)

Schad, Donna Jean
J 17: 501 (effect of feeding *Phocanema* parasites to pups)

Schaefer, Milner Baily
J 14: 669 (commercial marine fisheries management)

Schiffman, Friedel S.
S 284 (Gulf of St. Lawrence sunfish)
SS 813 (capelin as microsporidian host)

Schilbeodes mollis (*see* Madtom, tadpole)

Schmidt, Peter Joseph
J 21: 635 (fish pituitary removal technique)
PRP 75: 48 (freshwater fishes analyses); **83**: 28 (B.C. whale liver oils vitamin A; correction on **84**: 50); **86**: 3 (mechanical brining for B.C. salt herring); **88**: 66 (freshwater fishes trimmings & offal utilization); **92**: 3 (salt herring analyses; correction on **93**: 2); **93**: 18 (meal from freshwater fishes); **102**: 22 (volatile reducing substances as quality test); **103**: 16 (soluble fertilizer from shrimp waste); **104**: 9 (raw fish quality re curd in canned salmon); **108**: 21 (stored fish rancidity control)
CVI 9, 12, 13 (freshwater fishes analyses)
S 504 (predicting canned sockeye salmon flesh colour); **564, 692** (isolation of salmon cortisones & cortisol); **573** (spawning migratory salmon biochemistry); **620, 636, 664, 668, 708** (salmon plasma hormone isolation); **770** (salmon steroid hormones metabolism)

Schizopoda
C 1917–18: 252 (Canadian); **2**: 98 (upper temperature tolerance)
PRP 95: 35 (in dogfish feed)
SS 306 (temperature re cardiac rhythm)

Schizothaerus nuttali (*see* Clam, horse)

Schnabel estimate
J 15: 19 (for population size)
B 119: 82, 100 (population multiple census method)

Scholarships
SS 1060 (through Fisheries Research Board)

Schooling (*see also* Migration)
J 8: 241 (Pac. salmons re seaward migration); **10**: 523 (coho & chum salmon fry responses to current); **15**: 251 (learning ability of salmon), 912 (stickleback; sand lance; seaperch; anchovy), 938 (Pac. herring: schooling characteristics); **21**: 1453 (re illumination & vision of Mexican tetra)

Schooner (*see also* Longlining)
SS 1057 (with powered dories)

Schroeder, William Charles
AF 12d, e, f (Atl. lampreys, sharks, rays & chimaeroids)

Schubenacadie River, N.S.
J 15: 1213 (salmon)

Schultz, Leonard Peter
C 7: 319 (B.C. new blenny & other records)
SS 440 (new Pac. marine records)

Schumacher estimate
J 15: 19 (for population size)
B 119: 96, 101 (re population censuses)

Sclerometer (*see* Firmness)

Scomber colias (*see* Mackerel, chub)

Scomber scombrus (*see* Mackerel, Atlantic)

Scomberesox saurus (*see* Saury, Atlantic)

Scopelogadus beanii (*see* Blueback, Bean's)

Scophthalmus aquosus (*see* Windowpane)

Scorpaenichthys marmoratus (*see* Cabezon)

Scotian Shelf (*see* Oceanography, Atlantic (NW open waters))

Scotland
SS 629 (fisheries biology & culture)

Scott, David Maxwell
J 10: 539 (*Phocanema* parasite in harbour seal); **11:** 171 (yellowtail flounder comparative study), 894 (infecting Atl. cod with smelt nematode); **13:** 343 (cod *Phocanema* specific identity); **14:** 975, **16:** 213 (cod fillet nematode incidence); **15:** 1 (*Phocanema* in porpoises), 495 (*Phocanema* in seal stomachs); **17:** 763 (*Phocanema* life history)
PRA 48: 10 (*Phocanema* codworm survey)
S 401 (*Phocanema* early stages in seals); **477** (larval *Contracaecum* in mysids); **548** (SW N.S. birds)
SS 920 (N.B. semipalmated sandpiper); **921** (N.B. worm-eating warbler); **974** (Cape Breton Greenland cod)

Scott, David Paul
J 17: 601 (aquarium water dechlorination); **18:** 383 (marking fish with radioactive iron); **19:** 149 (marking fish & lampreys with radioactive caesium), 715 (trout feed re fecundity); **21:** 1043 (thermal resistance of pike, maskinonge, & their hybrids)
PRC 1: 18 (Lake Superior lamprey electric barrier)
CCG 6: 13 (radioactive marking)

Scott, Donald Charles
SS 1091 (Lake Erie perch activity patterns); **1129** (perch record, Great Slave L.)

Scott, Flora Marie
SS 55 (a N Pac. *Nymphon* pycnogonid)

Scott, Frederick Hughes
C 1901: 49 (feed of sea urchin)

Scott, Margaret Anne
J 20: 243 (flounder kidney tubules muscular action), 679 (marine fish tissue culture), 743 (in-vitro maturation of *Phocanema decipiens*)

Scott, William Beverley
J 11: 884 (*Triaenophorus* host geographical distribution); **19:** 1013 (Lake Erie longjaw cisco); **20:** 849 (W Atl. blue whiting), 1189 (Great Lakes white perch), 1353 (Canadian Atl. mako sharks)
B 155 (Canadian Atl. marine fishes)
SS 946 (rearing yellow pikeperch fry); **1092** (Nfld. ninespine stickleback)

Scott, William Clifford Munroe
C 2: 129 (barndoor skate pathological thyroid); **4:** 137 (winter flounder egg-hatching factors)
SS 297 (barndoor skate thyroid growth re iodine content)

Scour-fish (*see* Oilfish)

Scouting (*see* Exploration)

Scrap fish (*see* Discards of fish at sea; Feedstuffs; Fox; Mink)

Scratch-belly (*see* Sea raven, Atlantic)

Scuba-diving (*see* Diving)

Sculpin, Aleutian (*Cottus aleuticus*) (coast-range sculpin)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 14: 655 (B.C. distribution); **16**: 838, 867 (predation on salmon fry); **17**: 929 (dwarf, in Cultus L., B.C.)
S 144: 72 (in B.C. fresh & salt water)
SS 1208: 160 (full description)

Sculpin, arctic (*Myoxocephalus scorpioides*) (*see also* Sculpin, arctic hookear; Sculpin, twohorn)
C 8: 30 (Hudson Bay)
J 9: 114 (Ungava Bay)
B 155: 360 (full description)
SS 1324 (arctic distribution & ecology)

Sculpin, arctic hookear (*Artediellus uncinatus*) (arctic hookear; arctic sculpin; hookear sculpin)
J 16: 511 (Passamaquoddy Bay record)
B 155: 346 (full description)

Sculpin, arctic staghorn (*Gymnocanthus tricuspis*)
C 8: 28 (Hudson Bay)
J 11: 248 (Strait of Belle Isle)
B 155: 348 (full description)
S 623 (N Foxe Basin)
SS 1324 (arctic distribution & ecology)

Sculpin, "barred" (*see* Sculpin, Puget Sound)

Sculpin, bigmouth (*Hemitripterus bolini*)
B 68R: 321 (full description)

Sculpin, blackfin (*Malacocottus kincaidi*)
B 68: 276, **68R**: 312 (full description)

Sculpin, buffalo (*Enophrys bison*)
C 1: 285 (feed of)
B 68: 258, **68R**: 308 (full description)
S 290 (B.C. records)

Sculpin, calico (*Clinocottus embryum*) (mossy sculpin)
B 68: 272, **68R**: 305 (full description)
S 290 (B.C. range extension)

Sculpin, coastrange (*see* Sculpin, Aleutian)

Sculpin, Columbia (*Cottus hubbsi*)
J 14: 654 (B.C. distribution)
SS 1208: 167 (full description, B.C.)

Sculpin, comb (*Icelinus borealis*) (northern sculpin)
B 68: 253, **68R**: 287 (full description)
S 290 (B.C. range extension)

Sculpin, crested (*Blepsias bilobus*) (*Histiocottus bilobus*)
B 68: 246, **68R**: 317 (full description)

Sculpin, daddy (*see* Sculpin, shorthorn)

Sculpin, darter (*see* Sculpin, slim)

Sculpin, deepwater (*see* Sculpin, fourhorn)

Sculpin, filamented (*Icelinus filamentosus*)
B 68: 255, **68R**: 290 (full description)
S 290 (W coast Vancouver Is.)

Sculpin, fluffy (*Oligocottus snyderi*)
B 68: 270, **68R**: 302 (full description)
S 290 (B.C. range extension)

Sculpin, fourhorn (*Myoxocephalus quadricornis*) (*Triglopsis thompsoni*; deepwater sculpin; four-horned sea scorpion; four-spined sculpin)
C 8: 31 (Hudson Bay)
J 9: 117 (Ungava Bay)
B 155: 357 (full description)
S 481 (Man.)

Sculpin, four-spined (*see* Sculpin, fourhorn)

Sculpin, giant marbled (*see* Cabezon)

Sculpin, globe-headed (*see* Sculpin, mosshead)

Sculpin, gray (*see* Sculpin, longhorn)

Sculpin, great (*Myoxocephalus polyacanthocephalus*)
B 68: 259, **68R**: 307 (full description)
S 290 (W coast Vancouver Is.)

Sculpin, Greenland (*see* Sculpin, shorthorn)

Sculpin, grunt (*Rhamphocottus richardsoni*) (grunt-fish)
B 68: 280, **68R**: 319 (full description)

Sculpin, hookear (*see* Sculpin, arctic hookear)

Sculpin, lesser filamented (*Icelinus tenuis*) (spotfin sculpin)
B 68: 254, **68R**: 289 (full description)
S 290 (B.C. range extension)

Sculpin, little (*see* Grubby)

Sculpin, longfin (*Jordania zonope*)
B 68: 260, **68R**: 285 (full description)

Sculpin, longhorn (*Myoxocephalus octodecemspinosus*) (gray sculpin; long-spined sculpin)
C 1902–05: 86, **1918–20**: 111 (off N.S.); **1**: 413 (body temperature); **2**: 104 (high-temperature tolerance); **8**: 275 (intestinal & slime bacteria)
J 7: 96 (thiaminase in); **14**: 859, **17**: 763 (nematode parasites); **15**: 826 (Miramichi estuary, N.B.)
B 155: 355 (full description)
S 17: 14 (insulin in); **33**: 141 (temperature effect on muscles & nerves); **234** (P.E.I.); **587** (Minas Basin, N.S.)

Sculpin, long-spined (*see* Sculpin, longhorn)

Sculpin, mailed (*Triglops murrayi*) (*T. ommatistius*) (*see also* Sculpin, ribbed (Atlantic))
C 1902–05: 86 (N.S.); **8**: 26 (Hudson Bay)
J 9: 112 (Ungava Bay); **16**: 511 (N.S.); **17**: 763 (nematodes in)
B 73: 2 (Canadian E Arctic); **155**: 362 (full description)

Sculpin, manacled (*Synchirus gilli*)
B 68: 265, **68R**: 322 (full description)

Sculpin, marbled (*see* Cabezon)

Sculpin, mosshead (*Clinocottus globiceps*) (globeheaded sculpin)
B 68: 271, **68R**: 304 (full description)
S 290 (B.C. records)

Sculpin, mossy (*see* Sculpin, calico)

Sculpin, mottled (*see* Muddler, northern; *also* Sculpin, slimy)

Sculpin, northern (*see* Sculpin, comb)

Sculpin, Nybelin's (*Triglops nybelini*) (*see also* Sculpin, mailed; Sculpin, ribbed)
J 9: 113 (Ungava Bay)
B 155: 361 (full description)

Sculpin, Pacific staghorn (*Leptocottus armatus*) (bullhead; "cabezon")
C 7: 465 (reaction to noise)
B 68: 256, **68R**: 309 (full description)
S 290 (B.C. records); **542** (nitrogen excretion); **1280**: 169 (B.C. freshwater occurrence)

Sculpin, padded (*Artedius fenestralis*)
B 68: 249, **68R**: 298 (full description)

Sculpin, pallid (*Cottunculus thompsoni*)
B 155: 348 (off N.S.)

Sculpin, plumose (*see* Sculpin, scalyhead)

Sculpin, polar (*Cottunculus microps*) (*see also* Sculpin, twohorn)
B 155: 347 (full description)

Sculpin, prickly (freshwater) (*Cottus asper*) (prickly bullhead)
J 10: 196 (upper temperature limit); **11**: 703 (parasites, B.C.); **12**: 499 (Skeena R. basin lakes); **13**: 777, **14**: 657 (B.C. distribution); **16**: 838, 867 (consumption of salmon fry)
B 55: 37 (feed of; merganser prey); **56**: 38 (Okanagan L., B.C.)
PRP 19: 3 (as squawfish feed); **32**: 21 (predator of young salmon, Cultus L., B.C.); **65**: 70 (sudden mortality); **67**: 23, **68**: 55, **70**: 10, **74**: 9, **78**: 6 (salmon predator in Skeena R. lakes); **80**: 55 (sockeye salmon predator)
S 144 (B.C. lakes, as prickly bullhead)
SS 1208: 158 (full description, B.C.)

Sculpin, prickly (marine) (*see* Sculpin, saddleback)

Sculpin, Puget Sound (*Artedius meanyi*) (*Ruscarius meanyi*; "barred" sculpin; "striped" sculpin)
J 20: 1505 (description; B.C. records)

Sculpin, ribbed (Atlantic) (*Triglops pingeli*) (*see also* Sculpin, mailed)
B 155: 362 (distinction from *T. murrayi*, the mailed sculpin)

Sculpin, ribbed (Pacific) (*Triglops beani*)
B 68: 262, **68R**: 295 (full description)

Sculpin, Rice's (*see* Sculpin, spoonhead)

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Sculpin, rosylip (*Ascelichthys rhodorus*)
B 68: 274, **68R**: 310 (full description)
S 290 (B.C. records)

Sculpin, roughback (*Chitonotus pugetensis*)
B 68: 252, **68R**: 286 (full description)

Sculpin, roughspine (*Triglops macellus*) (*Prionistius macellus*)
B 68: 261, **68R**: 294 (full description)

Sculpin, round-nosed (*see* Sculpin, smoothhead)

Sculpin, saddleback (*Oligocottus rimensis*) (prickly sculpin)
B 68: 268, **68R**: 300 (full description)
S 290 (B.C. range extension)

Sculpin, sailfin (*Nautichthys oculofasciatus*) (sailor-fish)
B 68: 266, **68R**: 318 (full description)

Sculpin, scalyhead (*Artedius harringtoni*) (plumose sculpin; whitespotted sculpin)
B 68: 248, **68R**: 296 (full description)
S 290 (B.C. records)

Sculpin, sharpnose (*Clinocottus acuticeps*)
B 68: 273, **68R**: 306 (full description)

Sculpin, shorthead (*Cottus* sp.)
J 14: 654, 666 (B.C. distribution)

Sculpin, shorthorn (*Myoxocephalus scorpius*) (daddy sculpin; Greenland sculpin)
C 1902–05: 91 (trematode parasites); **8**: 275 (slime & intestinal bacteria)
J 9: 116 (Ungava Bay); **11**: 963 (trematode host); **16**: 826 (Miramichi R., N.B.); **17**: 763 (nematode parasites); **20**: 679 (tissue explant cultures)
B 155: 358 (full description)
S 17: 14 (insulin from); **33**: 141 (temperature effect on muscle & nerves)

Sculpin, silverspotted (*Blepsias cirrhosus*) (silver spot)
B 68: 245, **68R**: 315 (full description)
S 290 (B.C. range extension)

Sculpin, slim (*Radulinus asprellus*) (darter sculpin)
B 68: 263, **68R**: 291 (full description)
S 290 (B.C. range extensions)

Sculpin, slimy (*Cottus cognatus*) (Miller's thumb)
C 1911–14(II): 49 (Lake Huron); **1**: 437 (Lake Athabaska)
J 9: 114 (Ungava Bay); **11**: 704 (parasites, B.C.); **13**: 777, **14**: 656 (B.C. distribution); **15**: 214 (Heming Lake, Man.); **16**: 147 (associations in Ont. streams), 826 (Miramichi R., N.B.); **21**: 1339 (distinguished from *C. bairdii*)
S 144: 72 (B.C. distribution); **481** (Man.)
SS 816 (rapid skin colour change); **1208**: 165 (full description, B.C.)

Sculpin, smoothhead (*Artedius lateralis*) (smooth- or round-nosed sculpin)
B 68: 250, **68R**: 299 (full description)
S 290 (B.C. records)

Sculpin, soft (*Gilbertidia sigalutes*)
B 68: 279, **68R**: 313 (full description)

Sculpin, spatulate (*Icelus spatula*)
J 9: 119 (Ungava Bay)
B 155: 352 (full description)

Sculpin, spinyhead (*Dasycottus setiger*)
B 68: 275, **68R**: 311 (full description)
S 290 (second B.C. record)

Sculpin, spinynose (*Radulinus taylori*) (*Asemichthys taylori*; Taylor's sculpin)
C 1906–10: 215 (as new species)
B 68: 264, **68R**: 292 (full description)
S 143, 290 (B.C. records)

Sculpin, spoonhead (*Cottus ricei*) (Rice's sculpin; spoonhead muddler)
J 13: 777, **14**: 657 (B.C. distribution)
S 357 (Lake Winnipeg region); **481** (Man.)
SS 1208: 162 (full description, B.C.)

Sculpin, spotfin (*see* Sculpin, lesser filamented)

Sculpin, staghorn (*see* Sculpin, arctic staghorn; Sculpin, Pacific staghorn)

Sculpin, "striped" (*see* Sculpin, Puget Sound)

Sculpin, tadpole (*Psychrolutes paradoxus*)
B 68: 278, **68R**: 314 (full description)
S 290 (Queen Charlotte Is.)

Sculpin, Taylor's (*see* Sculpin, spinynose)

Sculpin, thornback (*Paricelinus hopliticus*)
J 20: 851 (first B.C. record)

Sculpin, tidepool (*Oligocottus maculosus*)
C 7: 465 (reaction to sound)
B 68: 269, **68R**: 301 (full description)
S 290 (B.C. records)

Sculpin, torrent (*Cottus rhotheus*)
J 11: 704 (parasites, B.C.); **14**: 654 (B.C. distribution)
S 144: 71 (Kootenay R., B.C., description)
SS 1208: 163 (full description, B.C.)

Sculpin, twohorn (*Icelus bicornis*) (*Cottunculus microps*)
C 8: 26 (Hudson Bay)
J 9: 119 (Ungava Bay); **11**: 248 (Belle Isle Strait); **16**: 511 (Fox R., Que., record; as *Cottunculus microps*)
B 155: 351 (full description)
S 623 (off N Baffin Is.)

Sculpin, whip (*see* Sea raven, Atlantic)

Sculpins (general) (*see also* foregoing individual species)
C 2: 103 (high-temperature tolerance), 119 (insulin from); **3**: 443 (post-mortem muscle changes); **8**: 275 (slime & intestinal bacteria)
B 7: 21 (Langerhan's islets tissue); **73**: 2, 3 (Canadian E Arctic); **94**: 21 (arctic & subarctic distribution)
CNS 1–8 inclusive (B.C. trawl landings by areas)
S 17: 14 (insulin from); **33**: 141 (temperature effect on muscle & nerves); **34** (asphyxia & isletectomy effects on blood sugar); **52** (muscle lactic acid); **234** (Malpeque Bay, P.E.I.); 461 (response to electrofishing)

Scup (*Stenotomus chrysops*) (*S. versicolor*; porgy)
J 16: 510, **17**: 732 (records in N.B. & N.S. waters)
B 155: 264 (full description)

Scyphozoa (*see* Jellyfish)

Scytalina cerdale (*see* Graveldiver)

NOTE *re* entries commencing with the letters SEA
Because of varying usage among different authorities for the spelling of certain expressions commencing with SEA, all such entries are arranged according to the alphabetical order of the letter following SEA, irrespective of whether they are single words, hyphenated words, or two separate words.

Sea-anemone (*see also* Anthozoa)
PRP 55: 7 (irritating human skin)
S 5: 2 (*Peachia* on jellyfish); **517** (sterols in); **623** (arctic)

Seabass, white (*Cynoscion nobilis*)
B 68: 145, **68R**: 217 (full description)

Seabream, Johnson's (*see* Pomfret, bigscale)

Sea-cucumbers
C 1917–18: 235 (Canadian); **1**: 21 (Hudson & James Bays)
J 3: 350 (Hudson Bay); **12**: 899 (E arctic)
B 89: 347 (oil characteristics)
SS 256 (habits); **280** (parasitic gregarines)

Sea eel (*see* Eel, American conger)

Sea flea (*Orchomenella pinguis*)
PRA 60: 14, **69**: 16 (lobsters eaten by)

Sea grass (*see* Eel-grass)

Seahorse (*Hippocampus hudsonius*)
[Board's Annual Report for 1952, page 50, records this species from St. Margaret Bay, N.S.]

Seahorse, spotted (*Hippocampus erectus*)
B 155: 176 (full description)

Seal (Atlantic and eastern arctic, in general) (*see also* individual species names)
B 85, 137 (descriptions; distribution; etc.); **94** (arctic & river)
CCG 1 (economics & products, E arctic)
CNG 64 (productive capacities)
CSG 18 (life histories; descriptions; habits)

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S 599 (infection by *Phocanema*)
SS 554, 555 (water balance; respiration); **901, 928** (aerial survey); **990** (biology)

Seal (Pacific and subarctic, in general) (*see also* individual species names)
B 85 (descriptions; distribution, etc.); **93** (B.C.)
CNG 64 (productive capacities)

Seal (products in general) (*see also* Blubber; *also* names of individual species)
B 37, 59, 89 (oils characteristics, uses & vitamins; *see* their indexes)
CAG 1: 60 (meat, blubber & skins)
SS 936 (margarine from oil)

Seal, bay (*see* Seal, harbour (Atlantic))

Seal, bearded (*Erignathus barbatus*) (squareflipper)
J 11: 279 (parasites); **14:** 880 (incidence off Nfld.); **15:** 219 (age, growth & reproduction)
B 85: 18, **137:** 21 (description; distribution)
CAG 1 (economics; availability; sustained yield; products); **6** (netting in Hudson Bay)
CNG 64: 57 (in arctic fishery)
CSG 18 (description)
S 329: 8 (Ungava); **361:** 87 (arctic ecology); **765** (population dynamics re exploitation)
SS 111, 119 (Hudson & James Bays)

Seal, elephant (*Mirounga angustirostris*)
J 11: 279 (parasites)
SS 956 (rarity on B.C. coast)

Seal, fur (*see* Seal, northern fur)

Seal, gray (*Halichoerus grypus*) (Atlantic seal; horsehead)
J 11: 279 (parasites; host corrected to harbour seal on **16:** 385); **14:** 879, 994 (distribution re *Phocanema* parasite); **15:** 495 (*Phocanema* incidence in stomachs), 1153 (nature of investigations); **17:** 772 (feed and parasite)
B 89: 19, **137:** 7 (description, distribution)
PRA 61: 5 (feed of)
CSG 18 (description; habits; control; bounty)
S 840 (fatty acids of milk)
SS 1035 (algal growth on)

Seal, Greenland (*see* Seal, harp)

Seal, hair (*see* Seal, harbour (Pacific))

Seal, harbour (Atlantic) (*Phoca vitulina concolor*) (bay seal; common seal; spotted seal)
C 1902–05: 30 (dynamiting)
J 7: 471 (decolorization of oil); **10:** 539 (parasitization experiments with *Phocanema*); **14:** 870, 994, **15:** 495, **16:** 213 (re *Phocanema*); **15:** 1153 (nature of investigations); **17:** 772 (feed of)
B 59: 419, **89:** 357 (blubber oil characteristics); **85:** 8, **137:** 4 (description; distribution); **94** (Canadian Arctic & river distribution)
PRA 37: 9 (male & female liver analyses); **57:** 3 (oil fractionation); **59:** 27 (soap from polymerized oil); **61:** 5 (feed of)
CSG 18 (description; habits)
S 361: 87 (arctic & subarctic ecology); **687** (glycerol & methyl esters from oil); **728** (pilot plant for processing northern); **810, 819, 839** (blubber oil fatty acids)
SS 111, 117, 119 (Hudson & James Bays); **1020** (delayed implantation)

Seal, harbour (Pacific) (*Phoca vitulina richardi*) (hair seal)
C 1: 291 (as predator)
J 11: 279 (parasites; host erroneously stated to be gray seal); **13:** 489 (parasites)
B 85: 8 (description; distribution); **93** (life history, etc., particularly Skeena R.); **146** (feeding habits)
PRP 36: 10, **71:** 5 (blubber & liver oil properties & vitamins); **72:** 36, **78:** 6 (Skeena R. salmon predator; control); **98:** 10 (salmon repellent action)
S 611 (age from tooth)

Seal, harp (*Phoca groenlandica*) (*Pagophilus groenlandicus*; Greenland seal)
J 8: 189 (properties & deodorization of oil); **11:** 246 (Belle Isle Strait); **12:** 641 (liver extracts & hydrolysates composition); **14:** 880, 994, **15:** 495, **16:** 213 (re *Phocanema* parasite); **15:** 1153 (nature of investigations); **18:** 865 (fatty alcohols from oil); **19:** 839 (air-blowing of oil)

B 59: 419, **89**: 356 (blubber oil characteristics); **85**: 13, **137**: 10 (description; distribution)
PRA 61: 5 (feed of)
CAG 4 (sustainable catch); **5** (populations)
CNG 64: 29 (productive capacity)
CSG 18 (description; habits)
S 361: 87 (arctic & subarctic ecology); **416** (utilization of populations); **775** (habits, age, etc. re sealing industry); **870** (cranial variation)
SS 111 (Hudson Strait); **902**, **928** (aerial survey)

Seal, hooded (*Cystophora cristata*) (bladdernose)
J 11: 246 (Belle Isle Strait); **14**: 880 (Nfld. distribution); **15**: 1153 (nature of investigations)
B 85: 17, **137**: 14 (description; distribution)
CNG 64: 30 (productive capacity)
CSG 18 (description; habits)
S 361: 87 (arctic & subarctic ecology)
SS 111 (Hudson Strait)

Seal, jar (*see* Seal, ringed)

Seal, northern fur (*Callorhinus ursinus*) (*C. alascanus*) (fur seal) (*see also* International North Pacific Fur Seal Commission)
J 10: 560 (stomach content study, NE Japan); **11**: 279 (parasites); **17**: 123 (with dolphins; correction on page 944); **21**: 773 (estrus & reproduction histology)
B 85: 1, **137**: 28 (description); **89**: 357 (oil characteristics); **146** (feeding habits)
CNG 64: 53 (productive capacity)
S 160 (stomach contents survey); **426** (B.C. coastal occurrences); **453**: 51, **851**: 65 (Canada's participation in catch, 1876–1961)
SS 453 (feed of); **952** (life history; Pribilof sealing); **1096** (distribution; feed); **1261** (Canada's share of fishery)

Seal, ribbon (*Phoca fasciata*)
B 85: 13 (description; distribution)

Seal, ringed (*Phoca hispada*) (jar seal)
J 6: 420 (*Themisto* in stomach); **14**: 880 (Nfld. distribution)
B 85: 10, **137**: 17 (description; distribution); **94**: 25 (Canadian Arctic distribution); **118** (biology in E Canadian Arctic)
CAG 1 (economics, availability, sustained yield, products); **6** (netting in Hudson Bay)
CNG 64: 57 (productive capacity)
CSG 18 (description)
S 361: 87 (arctic ecology); **469** (description; teeth; etc.); **594** (relation to Caspian Sea & Baikal L. seals); **728** (pilot plant for processing northern); **765**, **767** (population dynamics; exploitation; determining numbers & availability)
SS 111 (Hudson Strait)

Seal, spotted (*see* Seal, harbour (Atlantic))

Seal, Ungava freshwater (*Phoca vitulina mellonae*)
B 85: 9 (description; habitat); **93**: 4, **94**: 26 (in Ungava lakes)

Seal Island, B.C.
PRP 51: 7, **54**: 14, **61**: 4, **62**: 13, **74**: 22 (butter clam digging to establish digging quotas, B.C.)

Sea-lettuce (*Enteromorpha linza* and *Ulva lactuca*)
B 127: 23 (B.C. resource)
CNG 44: 10 (used by spawning herring)

Sea level (*see also* Oceanography)
J 11: 853 (anomaly, Seymour Narrows, B.C.); **14**: 945 (wind effect on, B.C. coast); **15**: 1171 (atmospheric pressure effect on)
SS 1297 (temperature & salinity re IGY recording of)

Sea lice (*see* Amphipoda; Copepoda, parasitic; Parasites)

Sea lion, California (*Zalophus californianus*) (black sea lion; barking sea lion)
J 11: 20 (parasites of)
SS 352 (general)

Sea lion, northern (*Eumetopias jubata*) (Steller's sea lion)
C 1917–18: 5 (B.C. Commission investigation); **1**: 291 (as predator)

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J 11: 279, **13**: 489 (parasites of); **15**: 5 (B.C. abundance & distribution); **21**: 415 (female age & growth)
B 59: 69, 418, **89**: 70, 357 (liver & blubber oil characteristics); **85**: 1 (Canadian Arctic & Subarctic); **146** (feeding habits)
PRP 36: 10, **71**: 5 (blubber & liver oil properties & vitamins); **98**: 10 (salmon repellent action of skin extract); **112**: 18 (feed of)
CNG 64: 53 (productive capacity)
S 453, 851: 69 (B.C. fishery); **646** (habitat & habits, B.C.)
SS 166 (migrations); **352** (general)

Sea-moss (*Spongomorpha*)
CNG 44: 3 (herring use as spawning substrate)

Sea mouse (an annelid)
PRP 79: 35 (in feed of B.C. cod family fishes)

Sea otter (*Enhydra lutris*)
J 11: 280 (parasites of)
CNG 64: 53 (productive capacity, B.C.)
S 453 (B.C. catches to 1911; 1956 status); **851** 68 (no surviving colonies in B.C.)

Sea perch (*see* Cunner; *also* Seaperch)

Seaperch, blue (*see* Seaperch, striped)

Seaperch, dusky (*see* Seaperch, pile)

Seaperch, kelp (*Brachyistius frenatus*) (*B. brevipinnis*; brown sea-perch)
B 68: 148, **68R**: 214 (full description)

Seaperch, pile (*Damalichthys vacca*) (*Rachochilus vacca;* dusky or pile perch)
B 68: 151, **68R**: 210 (full description); **139** (in B.C. trawl fishery)
CNS 1–11 inclusive, **13** (B.C. trawl catches by districts, 1945–63)
S 389 (in B.C. trawl fishery)

Seaperch, redtail (*Holconotus rhodoterus*) (porgy)
B 68: 154, **68R**: 208 (full description)

Seaperch, shiner (*Cymatogaster aggregata*) (yellow shiner)
C 1: 285 (feed; spawning); **3**: 15 (gill cavity isopod parasite); **7**: 465 (reaction to sound)
J 15: 909 (school characteristics)
B 68: 147, **68R**: 213 (full description)
PRP 95: 35 (as dogfish prey)
S 290 (W coast Vancouver Is.)

Seaperch, striped (*Embiotoca lateralis*) (*Taeniotoca lateralis*; blue sea-perch)
C 1: 285 (feed of; spawning)
B 68: 149, **68R**: 211 (full description)
S 81 (muscle creatine content); **82** (arginase in organs); **542** (nitrogen excretion); **607** (muscle phosphorylribose enzyme)
SS 127 (distinction from white seaperch by scales)

Seaperch, walleye (*Hyperprosopon argentium*)
B 68: 153, **68R**: 207 (full description)

Seaperch, white (*Phanerodon furcatus*)
C 1: 285 (feed of; spawning)
B 68: 152, **68R**: 209 (full description)
PRP 26: 17 (liver; liver oil & vitamin A)
S 81 (tissue creatine content); **82** (arginase in organs)
SS 127 (distinction from striped seaperch by scales)

Sea poacher (*see* Alligatorfish, arctic; Sea poacher, Atlantic; for Pacific species *see* Poacher, having same common adjectival name)

Sea poacher, Atlantic (*Agonus decagonus*) (*Leptagonus decagonus*; alligatorfish; northern alligatorfish; sea poacher)
J 16: 511 (Gulf of St. Lawrence & N.S. records)
B 73: 4 (young at Lake Harbour, Baffin Is.)
B 155: 364 (full description)
S 203 (off Sable Is.)

Sea raven, Atlantic (*Hemitripterus americanus*) (gurnet; puff-belly; scratchbelly; whip sculpin)
C 1902–05: 86, **1918–20**: 111 (off N.S.); **1902–05**: 91 (trematode parasites); **2**: 119 (insulin from)
J 7: 96 (thiaminase in); **11**: 963 (host of trematode); **14**: 859, **17**: 763 (nematodes in); **16**: 826 (Miramichi fishery)
B 155: 350 (full description)
S 111 (Myxosporidia parasites); **587** (Minas Basin, N.S.)

Searcher (*Bathymaster signatus*)
B 68: 156, **68R**: 365 (full description)

Searobin, brown-winged (a fish) (*see* Searobin, striped)

Searobin, northern (*Prionotus carolinus*) (common gurnard; common searobin)
J 16: 511 (N.B. & N.S. record)
B 155: 341 (full description)
S 159 (Passamaquoddy Bay rarity)

Searobin, striped (*Prionotus evolans*) (brown-winged sea robin; northern striped gurnard)
J 16: 512 (Bay of Fundy, etc. records; correction on page 930)
B 155: 342 (full description)

Sea scallop (*see* Scallop, sea)

Sea scorpion, four-horned (*see* Sculpin, fourhorn)

"Sea serpent"
B 68R: 76 (remains of basking sharks sometimes mistaken for)
SS 238 (possibly giant squid); **523** (Prince Rupert: proved a basking shark remains)

Seasnail, Atlantic (*Liparis atlanticus*) (*Neoliparis atlanticus*)
C 1918–20: 112 (N.S.)
J 9: 120 (Ungava Bay)
B 155: 374 (full description)
S 203 (St. Andrews, N.B.)

Seasnail, blacksnout (*Paraliparis copei*)
B 155: 367 (occurrence off Canadian Atl. coast)

Seasnail, gelatinous (*Liparis koefoedi*)
J 9: 122 (Ungava Bay)
B 155: 377 (full description)

Seasnail, Greenland (*Liparis tunicatus*)
J 9: 121 (Ungava Bay)
B 155: 378 (full description)

Seasnail, longfin (*Careproctus longipinnis*) (sea tadpole)
J 16: 511 (off Fox R., Que.)
B 155: 373 (full description)
S 203 (off N.S.)

Seasnail, polka-dot (*Liparis cyclostigma*)
C 8: 35 (Hudson Bay)
B 155: 376 (full description)

Seasnail, striped (*Liparis liparis*)
B 155: 378 (full description)
SS 1324 (arctic distribution & ecology)

Season, variation with (*see* Variation, seasonal)

Sea spiders (*see* Pycnogonida)

Sea stars (*see* Starfish)

Sea tadpole (*Careproctus reinhardi*) (*see also* Snailfish, longfin)
B 155: 374 (full description)

Sea-urchins
C 1901: 49 (feed of *Stronglyocentrotus dröbachiensis*); **1**: 21 (Hudson & James Bays)
J 3: 350 (Hudson Bay); **12**: 899 (E arctic)
PRP 79: 35 (in cod feed)
S 116 (early development)
SS 77 (albino); **245** (rock-boring)

Sea water (*see also* Analysis, chemical (methods); Detritus; Lakes, saline; Nutrients (in water); Oceanography *and* allied subjects; *also* Sea water, refrigrated)
J 16: 7 (chemical composition of Atl. coastal)
B 125, 125R (manual of methods for analyses)
PRA 66: 24 (artificial, for holding lobsters)
CSG 21 (artificial, for holding lobsters)
S 576 (NH_3, Fe, NO_3, P analysis methods); **631** (nutrients & particulate organic matter in); **735** (extractor for trace pollutants); **814** (chlorophylls); **871** (free amino sugars determination)
SS 347, 349, 1326 (physical properties); **423, 871** (elements in); **477** (recommended method of reporting chemical analyses)

Sea water, refrigerated, for transport and holding of fishery products (*see also* Chilling; Icing; Refrigeration)

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C 7: 147 (iced, for haddock)
J 1: 98 (bacterial survival in supercooled); **8:** 11 (value of temperatures close to 32°F); **16:** 791 (for dogfish); **21:** 37 (ultraviolet irradiation for bacterial control)
B 20: 12 (iced; suggested mechanical refrigeration); **124:** 8, **126** (with or without antibiotics)
PRP 71: 15 (suggested use); **95:** 39 (equipment; comparison with icing; correction on **96:** 10); **98:** 23, **100:** 3, **104:** 3, **108:** 10, **112:** 3 (equipment); **100:** 12, **104:** 7, 9, 16, 19, **106:** 6, **110:** 16, **112:** 15 (comparisons with icing; use of antibiotics; effects on products); **114:** 7 (unloading fish from, by pumping)
S 370: 3 (iced); **375, 404, 438, 440, 524** (with antibiotic); **455** (for holding sardines before canning); **510A, 524, 671** (review of use for transport & storage); **615** (Na & K loss or uptake, & weight changes, of fish held in)

Seaweed products (*see also* Eel-grass; Irish moss; Kelp; Seaweeds)
C 1911–14(I): 51 (iodine); **1914–15:** 25 (iodine; fertilizer), 169 (iodine yields); **2:** 503 (*d*-mannitol)
B 127: 18 (properties & potentialities from B.C. sources)
PRP 45: 4 (agar for canning halibut cheeks); **64:** 53 (agar & algin yields); **84:** 51, **88:** 67 (agar & carrageen use in antioxidant dips); **95:** 45 (vitamin B_{12} in *Fucus* & *Laminaria*); **99:** 18 (carrageen use in preservative ices)
CSG 1, 3, 10 (Irish moss processing)
S 273, 274 (carrageen physical properties); **701** (hypocholesterolemic agents from)
SS 85, 107, 108 (iodine); **333** (various); **954** (insulating material)

Seaweeds (*see also* Algae, marine; Eelgrass; Iodine; Irish moss; Kelp; Sea-lettuce; Seaweed products)
C 1902–05: 71 (Canso, N.S.); **1911–14 (I):** 51 (B.C. survey, re iodine content)
B 127 (B.C. marine plant resources)
PRP 56: 14 (Strait of Georgia)
CNG 44 (used by herring as spawning substrate)
S 437, 851: 69 (B.C. potentialities)
SS 333 (kinds & uses); **446, 447, 495** (Maritimes); **625** (bromine in); **835** (Hardy Bay, B.C.); **1018, 1071** (Ceylon resources); **1288** (arctic & subarctic)

Sebaste (*see* Redfish)

Sebastes alutus (*see* Rockfish, longjaw)

Sebastes marinus (*see* Redfish)

Sebastes marinus marinus (*see also* Redfish)
B 120 (distinction from *S. marinus mentella;* distribution)
PRA 66: 20 (*as above*)

Sebastes marinus mentella (*see* Redfish, deep-water)

Sebastes viviparus (*see* Redfish (eastern Atlantic))

Sebastodes aleutianus (*see* Rockfish, rougheye)

Sebastodes alutus (*see* Rockfish, longjaw)

Sebastodes auriculatus (*see* Rockfish, brown)

Sebastodes babcocki
SS 120 (as new species)

Sebastodes brevispinis (*see* Rockfish, silvergray)

Sebastodes caurinus (*see* Rockfish, copper)

Sebastodes crameri (*see* Rockfish, blackblotched)

Sebastodes dallii (*see* Rockfish, brown)

Sebastodes diploproa (*see* Rockfish, splitnose)

Sebastodes elongatus (*see* Rockfish, greenstripe)

Sebastodes helvomaculatus (*see* Rockfish, rosy)

Sebastodes introniger (*see* Rockfish, blackthroated)

Sebastodes flavidus (*see* Rockfish, yellowtail)

Sebastodes maliger (*see* Rockfish, quillback)

Sebastodes melanops (*see* Rockfish, black)

Sebastodes miniatus (*see* Rockfish, vermilion)

Sebastodes mystinus (*see* Rockfish, blue)

Sebastodes nebulosus (*see* Rockfish, yellowstripe)

Sebastodes nigrocinctus (*see* Rockfish, blackbanded)

Sebastodes paucispinis (*see* Bocaccio)

Sebastodes pinniger (*see* Rockfish, orange)

Sebastodes proriger (*see* Rockfish, redstripe)

Sebastodes rosaceus (*see* Rockfish, rosy)

Sebastodes ruberrimus (*see* Snapper, red)

Sebastodes rubrivinctus (*see* Rockfish, flag)

Sebastodes saxicola (*see* Rockfish, stripetail)

Sebastodes wilsoni (*see* Rockfish, pigmy)

Sebastodes zacentrus (*see* Rockfish, sharpchin)

Sebastolobus alascanus (*see* Rockfish, spinycheek)

Sebastolobus altivelis (*see* Rockfish, longspine channel)

Secchi disk (*see* Limnology; Oceanography; Transparency; Turbidity)

Sechelt Inlet, B.C. (*see also* Narrows Inlet, B.C.)
J 18: 907 (oceanography)
S 123 (physical oceanography)

Sedimentation of streams (*see also* Silt)
J 11: 362 (re planted Atl. salmon survival)

Sediments (*see also* Silt)
J 14: 33 (organic substances in lacustrine & marine; correction on page 997); **15**: 1175 (in discolored arctic ice)

Seed
SS 551 (trout killed by hooked seeds of *Bidens*)

Seepage rate (*see* Permeability)

Sehdev, Harcharan Singh
J 19: 619 (blood *p*H & mortality in trout & salmon); **20**: 1435 (general anaesthetic for sockeye salmon)

Seine, apron
J 19: 93 (construction & use for small stream fish)

Seine: beach, drag, shut-off or stop
J 17: 135 (for N.B. herring)
B 47: 6 (early use in B.C. herring fishery); **121**: 25 (commercial for NW Atl. herring)
SS 1107 (Ceylon fishery)

Seine, Danish; Danish seining
B 108 (exploration off Nfld.; method, page 15); **129**: 4 (for shrimp survey off Nfld.)
CJG 1, 2, 3, 4, 5 (Nfld. experiments & landings, 1953–57)

Seine, drum
CVI 18 (synthetic fibres vs. cotton for)

Seine, purse; Purse seining
J 17: 136, 827, 848 (N.B. herring)
B 14: 5 (salmon for tagging); **36**: 8 (commercial B.C. pilchard fishery); **47**: 6, **63**, **67**: 6 (commercial B.C. herring fishery); **96**: 3 (chum salmon); **111**: 60 (for Atl. herring investigation); **121**: 27 (commercial for NW Atl. herring)
PRP 66: 6 (for B.C. herring)

Selachians (*see also* individual names of sharks)
J 21: 1089 (chorioidal tapeta reflectivity)
B 68, 68R (descriptions of B.C.; *see* their indexes); **155**: 26 (descriptions of Canadian Atl.)
AF 12d (description of Canadian Atl.)

Selar crumenophthalmus (*see* Scad, bigeye)

Selection, natural
J 15: 27 (in trout; correction on **16**: 386); **15**: 887 (in sockeye salmon)

Selectivity of nets (*see* Mesh; Nets, selectivity of; *also* International Commission for the Northwest Atlantic Fisheries)

Selene vomer (*see* Lookdown, Atlantic)

Semotilus atromaculatus (*see* Chub, creek)

Semotilus corporalis (*see* Fallfish)

Sergeant, David Ernest
J 14: 83 (N Atl. small cetaceans; correction on **16**: 929); **20**: 1489 (N Atl. minke whales)
B 132 (pilot whale biology, Nfld.)
CAG 4 (NW Atl. harp seal sustainable catch); **5** (NW Atl. harp seal populations); **7** (Canadian E coast whales & dolphins); **8** (beluga biology & hunting, Canadian Arctic)
S 519 (dolphins off Nfld.); **572** (age of moose from teeth); **578** (age of whales from teeth); **759** (pilot whales external characters); **775** (harp seals re sealing industry); **870** (harp seal cranial variation)
SS 975 (guillemots biological relationships); **976** (little auks in Britain); **1003** (Nfld. pothead whale industry); **1004** (Nfld. & Labrador whaling); **1021** (Bay of Fundy white whale)

Seriola zonata (*see* Rudderfish, banded)

Serology and serum (*see also* Blood)
J 21: 691 (re Pac. sardine subpopulations)
SS 644 (furunculosis bacteria)

Serpent star (*see* Starfish, brittlestar)

Serrivomer beani (*see* Sawpalate, stout)

Seston
J 14: 33 (isolation or identification of chemical constituents; correction on page 997)

Settling of larvae (*see* Larvae; Oyster)

Seven Islands, Gulf of St. Lawrence
CSG 39 (source of cod population)

Sewage (*see* Pollution)

Sex ratios
C 3: 489 (Canadian fishes); **5**: 10, 39 (sockeye salmon), 466 (sunfish); **8**: 412 (haddock)
J 3: 26, **4**: 194, **11**: 988 (sockeye); **3**: 131 (B.C. herring), 403, **7**: 231 (pink salmon); **9**: 6 (arctic char); **10**: 418 (whitefish); **11**: 1 (trout-perch); 171 (yellowtail flounder); **15**: 275 (capelin)
B 25: 12 (haddock); **30**: 10, **62**: 29, **91**: 20 (crabs); **64**: 6 (smelt); **98**: 12 (beluga); **118**: 59 (ringed seal)
PRA 17: 6 (Atl. oyster); **68**: 20, **70**: 16 (Atl. salmon)
PRP 10: 5 (pink salmon); **11**: 18 (Dungeness crab); **19**: 11 (lake & stream trouts); **30**: 3 (summer herring); **36**: 12 (brown trout); **40**: 17 (eulachon); **59**: 10 (flatfishes); **63**: 35 (lemon sole); **75**: 31, **102**: 16 (sockeye); **79**: 30 (whales); **91**: 21 (sockeye smolts)
CJG 3 (redfish)
CNG 52 (chum & sockeye salmon, 1958)
NRB 2: 49, **17**: 24 (Atl. capelin); **7**: 12, **16**: 35 (lobster); **15**: 13 (Atl. dogfish)
NSB 15: 25 (lobster)
S 237 (kokanee & sockeye); **285**, **327**, **343** (B.C. herring); (for sockeye, *see* series under Salmon, sockeye (biology), commencing with S 77); **654**, **655**, **656**, **657**, **658**, **769**, **859** (NE Pac. salmons)
SS (for sockeye, *see* series under Salmon, sockeye (biology), commencing with **SS 92**); **532** (sockeye); **667** (pilchard)

Sex reversal
C 7: 283 (Atl. oyster)
J 5: 361 (Atl. oyster)
B 34: 15 (Pac. native oyster); **60**: 13, **131**: 27 (Atl. oyster)
PRA 5: 3 (Atl. oyster)
PRP 4: 9 (Pac. shrimps)
S 93 (*Pandalus* shrimp)

Sexual maturity (*see* Maturity)

Seymour Narrows, B.C. (*see also* Johnstone Strait, B.C.)
J 11: 853 (mean sealevel anomaly)
PRP 111: 3 (effects on fish from blasting Ripple Rock)

"Shack" (hake bait) (*see also* Coarse fish)
PRA 58: 17 (relative efficiency as groundfish bait)

Shad, American (*Alosa sapidissima*) (alose)
C 1902–05: 95 (eggs & early life history); **2**: 161 (life history)
J 14: 655 (B.C. freshwater distribution); **15**: 1153 (investigations review); **16**: 814 (Miramichi Bay, N.B.); **17**: 713 (re tidal power project); **18**: 893 (proximate composition)

B 68: 54, **68R**: 103 (full description, Pac. coast); **89**: 66, 69, 346 (oils); **155**: 91 (full description, Atl. coast)
CFI 4 (canning)
CNG 64: 27 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CSG 19 (identification & description, Atl. coast)
S 155, 226 (off N.S.); **382** (introduction into California); **490** (nuptial behaviour)
SS 666 (Atl. coastal populations); **1208**: 33 (B.C. description & freshwater spawning); **1341** (parent–progeny relation, Connecticut R.)

Shad, gizzard (*Dorosoma cepedianum*)
CCG 5: 1 (proximate composition)
S 445 (lethal temperature limits)

Shagreen
PRP 63: 45 (from shark skins)

Shah, Navin Maneklal
J 21: 159 (phytoplankton photosynthesis)

Shakespeare Island region, Ont.
SS 429 (whitefish); **563** (higher aquatic plants)

Shand, James Arthur
S 376 (Strait of Georgia internal waves)

Shanly, E.
SS 206 (swelled canned sardines bacteriology)

Shann, E. W.
C 3: 341 (report by K. F. Pinhey on his plankton collection)

Shanny, arctic (*Stichaeus punctatus*)
C 1902–05: 87, **1918–20**: 112 (N.S.); **8**: 35 (Hudson Bay)
J 11: 249 (Strait of Belle Isle)
B 73: 9 (larvae, Lake Harbour, Baffin Is.); **155**: 313 (full description)

Shanny, daubed (*Lumpenus maculatus*) (*Leptoclinus maculatus;* langbarn)
J 9: 122 (Ungava Bay); **11**: 248 (Strait of Belle Isle)
B 155: 309 (full description)

Shanny, radiated (*Ulvaria subbifurcata*)
C 1902–05: 87 (Canso, N.S.)
J 16: 827 (Miramichi R., N.B.)
B 155: 314 (full description)
S 226 (off N.S.)

Shark, Atlantic sharpnose (*Rhizoprionodon terraenovae*)
B 155: 40 (full description)

Shark, basking (*Cetorhinus maximus*) (*Halsydrus maximus*) (bone shark)
J 16: 504 (Canadian Atl. records)
B 68: 54, **68R**: 76 (full description, Pac.); **59, 89** (oils; *see* their indexes); **140**: 8, **155**: 29 (description, distribution, Atl.)
PRP 23: 4 (description); **35**: 12, **58**: 3, **65**: 67 (liver oil characteristics); **56**: 16 (stranded)
AF 12e: 16 (description, Atl.)
S 226, 236 (off Maritimes coast); **593** (liver oil anticholesterolemic activity)
SS 523 (remains considered as "sea serpent")

Shark, blue (*Prionace glauca*) (blue dog)
C 1902–05: 81 (Canso, N.S.); **2**: 126 (insulin in)
J 16: 504 (Canadian Atl. records); **17**: 221 (NE Pac. distribution); **21**: 861 (stomach contents, NE Pac.), 865 (morphometric description, NW Atl.)
B 68: 58, **68R**: 79 (full description, Pac.); **89**: 66 (liver oil vitamins); **140**: 25, **155**: 38 (description, distribution, Atl.)
PRP 23: 4 (description, Pac.)
AF 12e: 8 (description as great blue shark)

Shark, bone (*see* Shark, basking)

Shark, bonnethead (*Sphyrna tiburo*) (*Cestracion tiburo*)
AF 12e: 10 (description)

Shark, bramble (*Echinorhinus brucus*)
AF 12e: 20 (description)

Shark, brown cat (*Apristurus brunneus*) (brown shark)
B 68: 56, **68R**: 78 (full description)
PRP 23: 3 (description); **49**: 10 (B.C. records)

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Shark, deepsea cat (*Apristurus profundorum*)
B 140: 20 (egg-case & embryo); **155**: 34 (full description)

Shark, dogfish (*see* Dogfish)

Shark, dusky (*Carcharhinus obscurus*)
J 20: 1101 (NW Atl. records)
B 155: 37 (full description)
AF 12e: 7 (description)

Shark, Greenland (*Somniosus microcephalus*) (sleeper shark; ground shark)
C 2: 127 (insulin in); **8**: 17 (Hudson Bay)
J 9: 89 (Ungava Bay); **20**: 1085 (feeding on porpoise)
B 140: 36 (NW Atl., description & distribution; interchange Figs. 24 & 28); **155**: 42 (full description)
PRP 34: 16 (gear & bait for)
CNG 64: 56 (productive capacity)
AF 12e: 19 (description)
S 329: 12 (possible Ungava Eskimo use of); **441** (Greenland fishery)

Shark, ground (*see* Shark, sand; Shark, Greenland)

Shark, hammerhead (*see* Hammerhead, smooth)

Shark, mackerel (Atlantic) (*see* Porbeagle)

Shark, mackerel (Pacific) (*see* Shark, salmon)

Shark, mako (*see* Mako)

Shark, maneater (*see* Shark, white)

Shark, mud (*see* Shark, sixgill)

Shark, Pacific sleeper (*Somniosus pacificus*) (*S. microcephalus;* sleeper shark)
B 68: 60, **68R**: 83 (full description); **89**: 341 (liver oil data)
PRP 23: 5 (description); **35**: 12, **58**: 13 (liver oil)

Shark pilot (*see* Pilotfish; Rudderfish, banded)

Shark, Portuguese (*Centroscymnus coelolepis*)
B 140: 35, **155**: 44 (description & distribution, NW Atl.)
AF 12e: 18 (description)

Shark, salmon (*Lamna ditropis*) (*Isurus nasus;* Pacific mackerel shark)
J 17: 221 (NE Pac. distribution)
B 68: 53, **68R**: 75 (full description); **89**: 66, 69, 88, 92, 341 (liver oil data & vitamins, as mackerel shark)
PRP 61: 16, **65**: 67 (liver oil data); **74**: 22 (identification)

Shark, sand (*Carcharias taurus*) (ground shark)
B 155: 26 (full description)
AF 12e: 12 (description)

Shark, sevengill (*Notorhynchus maculatum*) (*N. cepedianus;* spotted cow shark)
B 68: 51, **68R**: 71 (full description); **89**: 66, 341 (liver oil data)

Shark, sharp-nosed mackerel (*see* Mako)

Shark, sixgill (*Hexanchus corinum*) (*H. griseus;* mud shark)
B 59: 410, **89**: 64, 66, 341 (liver oil data); **68**: 52, **68R**: 72 (full description)
PRP 23: 3 (description); **34**: 16 (gear & bait for); **35**: 12, **58**: 3 (liver oil & vitamins)
S 13 (pentose in); **35** (anatomy)

Shark, sleeper (*see* Shark, Greenland; Shark, Pacific sleeper)

Shark, soupfin (*Galeorhinus zyopterus*) (*G. galeus*)
B 59, 89 (liver oil, vitamins, etc.; *see* their indexes); **68**: 57, **68R**: 80 (full description)
PRP 23: 4 (description); **58**: 3, **65**: 67 (liver oil data); **61**: 24 (conference re catches & uses); **64**: 64, **67**: 31 (recovery of tagged); **77**: 91 (decline of B.C. fishery)
S 851: 51 (B.C. fishery)

Shark, spotted cow (*see* Shark, sevengill)

Shark, thresher (*Alopias vulpinus*) (swingletail; swiveltail)
J 16: 811 (Gulf of St. Lawrence)
B 68: 55, **68R**: 73 (full description, Pac.); **140**: 2, **155**: 27 (full description, Atl.)
S 226 (N.B.); **587** (N.S.)

Shark, tiger (*Galeocerdo arcticus*) (*G. cuvieri*)
AF 12e: 9 (description)

Shark, white (*Carcharodon carcharias*) (maneater shark)
J 16: 503 (N.B. record); **19**: 363 (first B.C. record)
B 140: 3, **155**: 30 (description & distribution, NW Atl.)
AF 12e: 15 (description)
SS 1017 (notes on Atl.)

Shark, whitetip (*Carcharhinus longimanus*) (*Pterolamiops longimanus*)
J 19: 517 (off Georges Bank)
B 155: 36 (full description)

Shark pilot (*see* Pilotfish; Rudderfish, banded)

Sharks (in general) (in addition to preceding entries, *see* Dogfish; Elasmobranchs)
B 59, 89 (liver oils and vitamins; *see* their indexes); **68**: 50, **68R**: 71 (B.C.); **140, 155** (Canadian Atl. coast)
PRP 23: 3 (B.C.); **34**: 16 (gear & bait for); **63**: 45 (skin uses); **82**: 20 (vitamin A financial values)
CNG 64: 28 (productive capacity)
AF 12e (Atl.)
S 453 (B.C. fishery)

Sharksucker (*Echeneis naucrates*) (pilot sucker)
B 155: 403 (full description)

Sharksucker, blue (*see* Remora)

Shaw, Barbara Louise
S 474 (Atl. oyster digestive tract anatomy); **561** (oyster gastric shield composition)

Shearwater, greater (*Procellaria gravis*)
S 751, 836 (feed study)

Sheepshead (freshwater) (*see* Drum, freshwater)

Sheepshead (marine) (*Archosargus probatocephalus*) (sheepshead porgy)
B 155: 262 (full description)

Shelf (*see* Continental Shelf; *also* entries re Scotian Shelf under Oceanography, Atlantic (northwestern open waters))

Shell, crustacean (*see also* Chitin; Crab; Lobster; Shrimp; etc.)
J 10: 521 (chitosans from lobster), 583 (physical chemistry of crab chitin)
PRP 71: 5 (glucosamine from chitin); **79**: 39 (detection in crab meat by ultraviolet light); **89**: 82 (meal from shrimp)
CHO 18 (in canned lobster)

Shell, molluscan (*see also* Abalone; Clam; Mussel; Oyster; Scallop, etc.; *also* following heading)
C 1906–10: 301 (in B.C. glacial deposits)
J 6: 209 (deposition, structure & quality of oyster), 948 (mud-blister worm on Atl. oyster)
B 22: 20, **34**: 16, 23, **60**: 30, **131**: 53 (for collecting oyster spat)
PRA 11: 10 (re scallop age determination); **45**: 3 (scallop shell disease), 6 (sunlight effect on development of oyster)
CSG 36 (preparation for oyster spat collection)
S 545 (*Mytilus edulis* types); **579** (erosion, in stored live oysters)

Shell, age determination from
J 11: 660 (Atl. scallop)
B 135: 17, **145**: 15 (Atl. scallop)
PRA 11: 10 (Atl. scallop)
S 15: 3 (Atl. blue mussel); **72**: 255 (littleneck clam); **73**: 272 (butter clam)

Shellfish (*see also* Abalone; Bivalves; Clam; Crab; Crustacea; Lobster; Mollusca; Mussel; Oyster; Pelecypoda; Scallop; Shellfish occasional toxicity; Shrimp; etc.)
C 1906–10: 221 (recognition of bivalve larvae)
B 128 (mechanical harvester)
PRA 32: 8 (N.B. shore molluscs survey); **66**: 3 (mechanical harvester); **71**: 21 (Maritime resource)
CFI 7, 17 (shucking plant equipment); **22** (processing plant sanitation)
CNG 64: 23, 50 (productive capacity)
CVI 3 (analyses of canned)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB** Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

S 245 (B.C. edible molluscs)
SS 779, 801 (biological investigation of B.C.); **1110, 1253, 1337, 1369** (mechanical harvester)

Shellfish occasional toxicity
J 7: 490 (Atl. clams & mussels); **14:** 65 (source; nature); **15:** 1154 (re public health); **19:** 101 (incidence in blue mussel); **20:** 983 (source)
B 75 (cause, effects, etc., in clams & mussels)
PRP 40: 11, **52:** 23, **82:** 3 (in B.C. clams & mussels); **112:** 10 (in B.C. clams, mussels & oysters)
S 245 (on B.C. coast); **518** (1957 epidemic in N.B.); **592** (history, incidence & control); **727** (Canadian research status, 1962)
SS 676 (Atl. mussels)

Shepard, Michael Perry
J 12: 387 (young speckled trout low oxygen acclimation; correction on page 942); **15:** 1007 (Skeena R. sockeye salmon spawning stock size & production); **21:** 1267 (scale key for Pac. salmons), 1329 (sockeye stock size & resultant production)
PRP 104: 34 (sockeye fry production, Lakelse L.), 38 (trout sports fishery, Lakelse L.)
CNG 52 (salmon age & sex composition sampling)
S 453 (B.C. fisheries resources abundance, distribution & exploitation); **712** (pink salmon marine survival, distribution & migration)
SS 1048 (Lakelse L. sockeye)

Sherman, A. A.
SS 638 (fish conservation)

Shern (*see* Wreckfish, American)

Sherwood, H. P.
SS 410 (N American oyster industry)

Shewan, James Mackay
J 16: 555 (trimethylamine test for fish grading)

Shieh, Hang-Shan
J 21: 539 (polyphosphate treatment for frozen cod)

Shiner (*see* Butterfish)

Shiner, blackchin (*Notropis heterodon*)
C 1911–14(II): 24 (Lake Huron)
J 16: 147 (associations in Ont. streams)

Shiner, blacknose (*Notropis heterolepis*)
B 116 (as merganser feed)
S 448 (Man. northern limit); **481** (Man.)

Shiner, common or creek (*Notropis cornutus*)
C 1911–14(II): 26 (Lake Huron); **1:** 439 (N Man.)
J 7: 169 (cruising speed re temperature); **16:** 417 (associations in Ont. streams), 818 (Miramichi R., N.B.)
S 445 (lethal temperature limits); **448** (Man. northern limit); **481** (Man.)

Shiner, emerald (*Notropis atherinoides*) (silverside minnow)
C 1911–14(II): 27 (Lake Huron); **1:** 423 (Lake Athabaska)
J 16: 147 (associations in Ont. streams)
B 94: 19 (northern Canada distribution)
S 445 (lethal temperature limits); **448** (Man. northern limit)

Shiner, golden (*Notemigonus crysoleucas*)
C 1911–14(II): 20 (Lake Huron)
J 16: 147 (associations in Ont. streams), 816 (Miramichi R., N.B.); **21:** 1453 (illumination re vision; schooling)
PRA 20: 6 (population in 3 N.S. lakes)
S 137, 213: 400 (Lake Jesse populations, N.S.); **206** (in 3 N.S. lakes); **357** (Lake Winnipeg region); **445** (lethal temperature limits); **448** (Man. northern limit); **481** (Man.)

Shiner, mimic (*Notropis volucellus*)
J 16: 147 (associations in Ont. streams)
S 448 (Man. northern limit); **481** (Man.)

Shiner, redfin (*Notropis umbratilus*)
S 481 (erroneous Man. record)

Shiner, redside (*Richardsonius balteatus*) (*Leuciscus balteatus:* lake shiner)
J 10: 196 (upper temperature limit); **11:** 696 (parasites, B.C.); **12:** 499 (Skeena R. basin lakes); **13:** 767, **14:** 657 (B.C. distribution); **16:** 247, 269 (predation by rainbow trout); **18:** 203 (feed competition with trout); **20:** 1001 (life history; correction on page 1553)
B 55: 36 (feed, B.C.); **56:** 35 (description, Okanagan L., B.C.)

PRP 66: 12, **68**: 55, **70**: 10, **72**: 28, **78**: 6 (re salmon in Skeena R. lake system)
S 144: 68 (B.C. lakes)
SS 1208: 105 (full description), 107 (hybrids)

Shiner, river (*Notropis blennius*)
C 1911–14(II): 25 (Lake Huron)
S 448 (Man. northern limit); **481** (Man.)

Shiner, rosyface (*Notropis rubellus*)
J 16: 147 (associations in Ont. streams)
S 448 (Man. northern limit)

Shiner, sand (*Notropis deliciosus*) (*N. stramineus ?*)
S 448 (Man. northern limit); **481** (Man. distribution)

Shiner, spotfin (*Notropis spilopterus*)
J 16: 147 (associations in Ont. streams)

Shiner, spottail (*Notropis hudsonius*) (spottail minnow)
C 1911–14(II): 25 (Lake Huron); **1**: 423 (description)
J 15: 214 (Heming L., Man.); **16**: 147 (associations in Ont. streams); **21**: 549 (host of *Ligula intestinalis* cestode)
B 94: 19 (northern Canada distribution)
S 448 (Man. northern limit)

Shiner, yellow (*see* Seaperch, shiner)

Shinners, Claude Wayne
S 780 (vertical starch gel electrophoresis)

Shippegan, N.B.
PRA 65: 3 (oyster mortalities)

Shipping of fishery products (*see* Packaging; Transportation)

Ships (*see* Holds; Icing; Sea water, refrigerated; Vessels, research)

Shipworms (*see also* Wood-borers)
C 1917–18: 93 (Atl. *Teredo* habits & distribution); **4**: 9 (salinity & *p*H effects on Pac. forms), 19 (Pac. *Bankia* breeding season)
J 5: 8 (*Teredo* growth, P.E.I.); **15**: 91 (salinity effects on incidence in Fraser R. estuary); **19**: 877 (*Teredo* re Passamaquoddy tidal power project); **21**: 1155 (B.C. *Teredo* distribution)
B 60: 70 (*Teredo* life history; combatting its ravages); **77**: 12 (P.E.I. larval); **80**: (incidence, B.C.); **131**: 99 (oyster enemy)
PRA 19: 6, **22**: 8 (wood preservatives deterrent against *Teredo*)
PRP 5: 3, **21**: 7 (life history; control measures); **31**: 14, **108**: 27 (chemical for control); **51**: 20 (dynamite for control); **54**: 12 (seasonal settlement of larvae); **105**: 3 (growth); **107**: 13 (comparison of deterrents)
COF 1 (copper oleate as deterrent)
S 19 (in B.C. waters); **44** (in Canadian Atl. waters); **45** (temperature & salinity re *Teredo* distribution); **602, 603** (*Bankia* growth & development; Xylophaga)
SS 209 (new classification of); **278, 325** (Pac. coast)

Shock (electrical) (*see also* Electrofishing; Lamprey, sea)
J 14: 153 (electrofishing effect on salmonid ova)
B 68R: 92 (from electric rays); **155**: 66, 67 (from Atl. manta & Atl. torpedo)

Shock (physical)
J 6: 252 (effect of dropping, on teleostean ova hatchability)

Shoemaker, Clarence Raymond
C 3: 1 (Hudson Bay amphipods); **5**: 219 (Gulf of St. Lawrence amphipods)

Shrimp, brown (*Crangon vulgaris*)
B 129: 3 (Nfld.)

Shrimp, coonstripe (*Pandalus danae*) (*see also* Shrimps (Pacific))
J 21: 1403 (B.C. growth, reproduction & distribution)
PRP 83: 30 (B.C. fishery; description)
CNG 31, 35, 55 (prospecting for, B.C.)
S 93 (sex reversal)
SS 317 (musculature); **408** (mating & oviposition)

Shrimp, ghost (*Calianassa californensis*)
PRP 74: 13 (distinction from similar crustacea)

Shrimp, giant red (*see* Shrimp, sidestripe)

Shrimp, humpback (*Pandalus hypsinotus*) (king shrimp) (*see also* Shrimps (Pacific))
J 21: 1403 (B.C. growth, reproduction & distribution)
PRP 83: 30 (description; B.C. fishery)
CNG 28, 31, 35 (prospecting for, B.C.)

Shrimp, king (*see* Shrimp, humpback)

Shrimp, mud (*Upogebia*)
PRP 74: 13 (distinction from similar crustacea)

Shrimp, pink (*Pandalus borealis*) (*see also* Shrimps (Atlantic); Shrimps (Pacific))
J 17: 235 (as redfish feed); **21:** 1403 (B.C. growth, reproduction & distribution)
B 129 (in Nfld. survey)
PRP 83: 30 (description; B.C. fishery); **101:** 3 (prospecting for)
CJG 5, 6 (Nfld. survey)
CNG 28, 31, 35 (prospecting for, B.C.)
S 387 (infection by *Contracaecum* nematode)

Shrimp, sidestripe (*Pandalopsis dispar*) (giant red shrimp) (*see also* Shrimps (Pacific))
J 21: 1403 (B.C. growth, reproduction & distribution)
PRP 83: 30 (description; B.C. fishery); **101:** 3 (prospecting for)
CNG 28, 31, 35, 39, 55 (B.C. prospecting, 1953–59)

Shrimp, smooth pink (*Pandalus jordani*) (*see also* Shrimps (Pacific))
J 21: 1403 (B.C. growth, reproduction & distribution)
CNG 28, 31, 35, 39, 55 (B.C. prospecting, 1953–59)

Shrimp, striped pink (*Pandalus montagui*) (*see also* Shrimps (Atlantic))
B 129 (in Nfld. survey)
CJG 5, 6 (Nfld. survey, 1957–58)

Shrimps (Atlantic) (*see also* Decapoda)
B 129 (Nfld. survey: *Pandalus & Spirontocaris*)
CNG 64: 28 (productive capacity)
AF 10m (descriptions)
S 4 (new & other *Spirontocaris* species); **482** (Ungava Bay); **499** (blackening of)
SS 733 (*Crago septemspinosus* larval stages)

Shrimps (freshwater) (*see* Amphipoda)

Shrimps (Indian Ocean)
J 17: 475 (keeping quality of iced, in India)

Shrimps (Pacific) (*see also Crangon;* Decapoda; Prawn)
C 1906–10: 187 (B.C. Macrura); **6:** 79 (B.C. Pandalidae post-embryonic development); **8:** 237 (B.C. *Spirontocaris & Hippolyte* larvae)
J 4: 88 (*Pandalus stenolepis* larval development); **5:** 344 (composition of canned); **19:** 1167 (*Crangon resima & Eualis barbatus* NE Pac. range extension); **21:** 419 (Peneidea & Caridea B.C. records), 1403 (Pandalidae growth, reproduction & distribution in B.C.)
B 126: 27 (stowage in refrigerated seawater)
PRP 4: 9 (general description & commercial importance); **43:** 3, **74:** 3, **89:** 82 (freezing & cold storage); **53:** 9 (nutritive value of canned); **63:** 38 (paste); **71:** 5, **89:** 82 (shell products); **73:** 58, **79:** 41, **82:** 8, **89:** 82 (sorting device); **74:** 13 (distinction of *Crangon & Pandalus* from similar crustacea); **83:** 30 (identification & commercial importance of *Pandalus & Pandalopsis* species); **89:** 82 (fresh; frozen; canned; meal; shell bran); **95:** 35, **99:** 3 (as dogfish & crab feed); **97:** 31, **98:** 23 (stowage in chilled seawater); **98:** 16, **100:** 19, **101:** 3 (prospecting for); **103:** 16 (soluble fertilizer from processing wastes)
CNG 28, 31, 35, 39, 55 (B.C. prospecting, 1953–59); **64:** 50 (productive capacity)
CVI 3 (composition of canned); **17** (thiamin & riboflavin in)
S 64 (species near Sydney, Vancouver Is.); **453** (B.C. fishery); **635** (*Axiopis spinulicauda*); **851:** 58 (B.C. fishery history & prospects)
SS 53, 76 (rhizocephalan parasitic on); **334, 957** (commercial); **623** (hatching & rearing larvae); **905** (English Bay, B.C., species); **1103** (B.C. fishery); **1106** (first B.C. crangonid record)

Shrinkage (*see also* Expansion coefficient)
J 20: 1441 (during formaldehyde preservation of specimens)
PRP 5: 7 (of products during cold storage)

Shucking of shellfish
B 60: 66, **131:** 139 (Atl. oysters)
CFI 7, 17 (equipment for shellfish plant); **11** (scallops); **23** (mussels); **25** (oysters)
CSG 22 (scallops)

Shuswap Lake, B.C.
S 197 (limnology)
SS 480 (young chinook salmon feed)

Shutt, Frank Thomas
C 1901: 15, 17 (analyses of gas works & pulpmill effluents as pollutants)

Sibakin, Kira
J 13: 375, **14:** 145 (sea lamprey "spike" potential)

Sicyogaster maeandricus (*see* Clingfish, flathead)

Sidaway, Ernest Pallant
PRP 49: 3 (refractive index of drip from frozen halibut); **52:** 3 (B.C. herring canning), 19 (vacuum in canned herring); **53:** 4 (bleaching razor clams for canning); **56:** 4 (fish smoking & drying tunnel), 7 (dehydrating fish); **58:** 20 (marinating herring); **59:** 12 (B.C. softwoods for fish smoking); **61:** 16 (mackerel shark liver oil); **63:** 38 (fish pastes; correction on **65:** 66); **63:** 41 (anchovy products); **65:** 73 (air-conditioned smokehouse)
SS 791 (salting & curing fish)

Sight (*see* Eye; Light, reactions to)

Sigurdsson, G. Jakob
J 6: 45 (fish bacteria glucose metabolism), 53 (fish spoilage surface effects)
SS 772 (rapid marine fish spoilage test)

Silica; Silicates; Silicic acid (*see also* Limnology; Oceanography)
C 7: 119 (colorimetric estimation in waters), 127 (in Passamaquoddy Bay waters)
J 14: 313 (in Strait of Georgia & Fraser R. waters); **16:** 7 (in Atl. coastal seawater); **18:** 1001 (ratio to other elements in phytoplankters)
B 122: 19 (of phytoplankton); **125:** 55 (determination in seawater)
PRA 72: 33 (in offshore W Atl. waters)
S 121 (biochemical significance to plankton growth)
SS 326 (analytical method for)

Silicoflagellates
PRP 11: 24 (as pilchard feed)

Siliqua patula (*see* Clam, razor (Pacific))

Silt (*see also* Inlet and fiord oceanography; Sediments)
C 7: 295 (glacial: sinking gill nets)
J 15: 886 (glacial: effect on salmon), 1175 (discoloring arctic ice); **18:** 907 (glacial: turbidity & bottom, in fiords)
PRA 5: 7 (re suitable oyster grounds)
PRP 10: 19, **41:** 14 (sinking gill nets); **69:** 70, **72:** 28 (glacial: in Skeena R. system lakes)

Silver and silver compounds
J 7: 55 (silver electrodes for water sterilization)
S 241 (explosion during reclamation of silver nitrate)
SS 808 (silver electrodes for water sterilization)

Silver Creek, Lake Huron, Ont.
J 20: 587 (brook stickleback downstream movement)

Silver spot (*see* Sculpin, silverspotted)

Silverman, Milton
SS 1130 (re Vancouver Station work on antibiotics as preservatives)

Silverside, Atlantic (*Menidia menidia*) (*M. notata*; sand smelt)
C 1918–20: 111 (Cape Breton, N.S.)
J 16: 822 (Miramichi estuary, N.B.)
B 155: 335 (full description)
CSG 15 (description)
S 234 (Malpeque Bay, P.E.I.); **587** (Minas Basin, N.S.)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Silverside, brook (*Labidesthes sicculus*)
C 1911–14(II): 37 (Lake Huron)

Simenchelys parasiticus (*see* Eel, snubnose)

Simončic, Joško Jose
S 455 (frozen vs. unfrozen sardines for canning)

Simpson, William Wesley
C 3: 437 (fish muscle immediate postmortem changes), 457 (rigor chemical changes)
S 34 (islectomy & asphyxia effects); **68** (liver relation to asphyxial hyperglycaemia); **119** (urea physiological significance)

Sinclair, Alexander Campbell
J 16: 321 (hatchery rainbow trout fatigue resistance); **19**: 127 (glycogen stores in trout tissues)

Sinclair, Robert John
C 4: 227 (haddock, lobster & clam spoilage)

Siphonophora (*see also* Coelenterata; Hydrozoa)
S 616 (NE Pac.)

Siphostoma fuscum (*see* Pipefish, northern)

Sipos, John Charles
J 21: 423 ("blackberry" problem in Atl. cod), 841 (pilchard oil fatty acids)
S 645 (continuous-recording differential refractometer); **782** (fouling of catherometer filaments); **797** (improved liquid elution column system); **838, 883** (gas–liquid chromatography of fatty acids); **847** (gas–liquid chromatography ketoacid-polymer substrates)

Sivalignam, S.
SS 1131 (Ceylon trawl fishery productivity)

Six-mile Creek, B.C.
PRP 86: 15, **91**: 13, **98**: 24 (sockeye salmon fry production)

Sixteenmile Lake, B.C.
J 20: 1001 (redside shiners life history; correction on **21**: 1553)

Size and size distribution of organisms (*see also* Age; Growth; Length–weight relations; Nets, selectivity of; Weight of fishes; *also* names of organisms *and* other cognate subjects)
J 1: 109 (*Bacillus*), 213, **2**: 350, **6**: 228, 281, 291, **10**: 385, **17**: 553 (lobster); **2**: 359, **7**: 186, **9**: 169, **17**: 541, **19**: 173 (trouts); **2**: 379, **17**: 453 (Atl. salmon); **3**: 108, 145 (B.C. herring), 403, **6**: 222, **16**: 329 (pink salmon); **5**: 84 (starfish); **6**: 267, **15**: 331, 961 (sockeye salmon); **6**: 428 (*Themisto*); **8**: 469 (ciscoes); **10**: 51 (Coregonidae), 307 (coho salmon); **11**: 171 (yellowtail flounder), 904 (chars); **13**: 647 (lemon sole); **14**: 899 (redfish), 953 (petrale sole), 975 (Atl. cod); **15**: 275, 295 (capelin); **16**: 107, 131 (Lake Winnipeg fishes), 339 (herring gill-net selectivity; correction on page 930), 553 (chum salmon re weight); **17**: 175 (haddock), 199 (chinook salmon size limits), 641 (Dungeness crabs), 699, 933 (Atl. herring), 929 (coastrange sculpins); **18**: 417 (Great Slave L. fishes), 513 (Pac. cod); **20**: 1441 (shrinkage during formaldehyde preservation)
B 1: 10 (plaice); **2**: 18 (lumpfish); **3**: 9 (angler); **4**: 7 (muttonfish); **32**: 19, 21, 29 (B.C. trouts), 37 (Dolly Varden); **47**: 31 (B.C. herring); **54**: 21 (lingcod); **56**: 44 (whitefish); **68, 68R** (greatest recorded sizes for B.C. marine fishes); **79**: 4 (speckled trout, Nelson R., Man.); **82**: 4 (Great Bear L. coregonines); **90**: 16 (chum & pink salmon); **93**: 6 (seals); **98**: 5 (beluga); **120**: 104 (redfish); **141**: 41 (longlined Atl. cod); **155** (greatest recorded sizes for Canadian Atl. marine fishes)
PRA 12: 3, **63**: 19, **68**: 9, **69**: 33 (Atl. cod); **22**: 9, **25**: 10, **30**: 7, **34**: 22 (lobster); **34**: 5, 7, **65**: 17 (Atl. smelt); **52**: 9 (scallops); **63**: 3 (green crab); **68**: 20 (Atl. salmon); **69**: 33 (haddock)
PRC 2: 53 (freshwater smelt re mechanical grading)
PRP 11: 18, **109**: 16 (Dungeness crab); **23**: 24 (large pilchard); **63**: 35, **73**: 68 (lemon sole); **87**: 33 (large herring); **99**: 30 (emigrant sockeye salmon smolts); **102**: 16 (Bella Coola sockeye); **105**: 22 (lingcod); **109**: 6 (pomfret), 9 (steelhead trout in NE Pac.)
CCG 3: 12 (largest Great Slave L. fishes)
CNG 12, 17, 20, 23 (Pac. albacore)
CSG 4, 11, 12, 14, 24 (lobster)

NRB 6: 12 (haddock); **7**: 7, **16**: 18, **18**: 14 (lobster); **13**: 15 (Atl. salmon); **14**: 69 (Atl. cod); **17**: 12 (Atl. capelin)

NRS 2: 13, **15**: 25 (lobster)

S 35 (sixgill shark); **77, 248** (sockeye salmon); **85, 249, 250** (B.C. trouts); **116** (sea urchin); **128, 183, 194, 264** (pilchard); **142** (Dungeness crab); **143** (kelp clingfish); **146, 285, 327, 343, 363** (B.C. herring); **161** (measuring board); **248** (pink salmon); **262** (B.C. commercial clams); **270** (Ont. salmon); **318** (P.E.I. brook trout); **322** (trolled chinook & coho salmon); **336** (Greenland cod); **348** (beaked whales); **352** (finback whales); **357** (Lake Winnipeg fishes); **506** (Atl. salmon re parr-to-smolt change)

SS 429 (lake whitefish); **731** (trout head lengths re environment); **802** (minimum limits re maximum yields)

Skate, abyssal (*Raja bathyphila*)
B 155: 50 (key relation to Atl. skates)

Skate, arctic (*Raja hyperborea*)
AF 12e: 30 (description)

Skate, barndoor (*Raja laevis*) (*R. stabuliforis*)
C 1902–05: 82 (N.S.), 92 (*Turbellaria* & trematode parasites); **2**: 129 (pathological thyroid); **4**: 117 (thyroid iodine content); **6**: 315 (respiratory system); **7**: 1 (pancreatic secretion), 17 (hormones effect on circulation), 477 (spiral intestine movement mechanism); **8**: 207 (arterial structure & stimulation), 275 (slime & intestine bacteria)

J 1: 179 (non-protein N muscle constituents), 239 (stomach nerve physiology), 261 (claspers function)

B 155: 55 (full description)

PRA 20: 3 (spoilage methylamine formation)

AF 12e: 35 (description)

S 99 (pancreatic secretion); **154** (egg capsule); **819** (liver fatty acids distribution re metabolism)

SS 297 (iodine re thyroid growth)

Skate, big (Atlantic) (*see* Skate, winter)

Skate, big (Pacific) (*Raja binoculata*)
J 21: 851 (egg cases, Oregon)
B 68: 63, **68R**: 84 (full description)
PRP 25: 10 (description), 12 (5 young in an egg-case)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
S 81 (creatine content of muscle & organs); **82** (arginase content of organs)

Skate, black (*Raja kincaidi*)
B 68: 66, **68R**: 88 (full description)

Skate, clearnose (*Raja eglanteria*)
AF 12e: 32 (description)

Skate, deepsea (*Raja abyssicola*)
B 68: 67, **68R**: 90 (full description)
PRP 25: 10 (description)

Skate, deep water (*Raja granulata*)
AF 12e: 29 (description)
S 154 (egg capsule)

Skate, eyed (*see* Skate, winter)

Skate, Jensen's (*Raja jenseni*)
B 155: 54 (full description)

Skate, little (*Raja erinacea*) (tobacco box)
C 1918–20: 99 (putrefaction rate); 131 (description; uses); **1**: 413 (body temperature); **2**: 126 (insulin in); **4**: 117 (thyroid iodine content), 495 (lethal temperature for reflexes), 501 (lethal upper temperature); **5**: 475 (salinity re blood changes); **6**: 315 (respiratory system); **7**: 17, 31, 439 (hormones effect on circulation), 447 (temperature & drugs effect on gastric motility); **8**: 137 (temperature re tissue survival time), 145 (drugs effect on intestinal motility), 277 (slime & intestine bacteria)

J 1: 251, 497 (gastric secretions), 261 (claspers function); **16**: 811 (off Miramichi R., N.B.)

B 155: 51 (full description)

AF 12e: 21 (description)

S 18: 6 (Langerhans islets); **33** (temperature effect on muscles & nerves); **51** (spinal reflexes); **99** (pancreatic secretion); **111** (Myxosporidian parasites); **154** (egg capsule); **563** (epizoic *Caliperia* ciliate)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal, **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax, **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Skate, longnose (*Raja rhina*)
B 68: 62, **68R**: 86 (full description)
PRP 25: 10 (description)
S 290 (Queen Charlotte Is.); **460** (abnormal pectoral fins)

Skate, prickly (Atlantic) (*see* Skate, smooth; Skate, thorny)

Skate, prickly (Pacific) (*see* Skate, starry (Pacific))

Skate, round (*Raja fyllae*)
B 155: 53 (full description)
AF 12e: 26 (description)

Skate, smooth (*Raja senta*) (prickly skate; smooth-tailed skate)
J 7: 96 (thiaminase in)
B 155: 61 (full description)
PRA 20: 3 (trimethylamine oxide reduction during spoilage)
AF 12e: 33 (description)
S 154 (egg capsule)

Skate, smooth-tailed (*see* Skate, smooth)

Skate, soft (*Raja mollis*)
B 155: 57 (full description)

Skate, spinytail (*Raja spinicauda*)
B 155: 63 (full description)
AF 12e: 28 (description)

Skate, spotted (*see* Skate, big (Atlantic))

Skate, starry (Atlantic) (*see* Skate, thorny)

Skate, starry (Pacific) (*Raja stellulata*) (prickly skate)
B 68: 64, **68R**: 87 (full description)
PRP 25: 10 (description)
S 290 (Queen Charlotte Is.)

Skate, thorny (*Raja radiata*) (*R. scabrata*; prickly skate; starry skate)
C 1902–05: 82 (N.S.), 92 (trematode parasite); **1918–20**: 132 (description); **4**: 497 (lethal temperature for reflexes); **6**: 315 (respiratory system); **7**: 17 (hormones effect on circulation); **8**: 17 (Hudson Bay)
J 20: 679 (tissue explant cultures)
B 155: 59 (full description)
PRA 20: 3 (reduction of trimethylamine oxide during spoilage)
CSG 2 (offshore landings, 1938–40)
S 33 (temperature effects on muscles & nerves); **154** (egg capsule); **234** (Malpeque Bay, P.E.I.)

Skate, white (*Raja lintea*)
AF 12e: 28 (description)

Skate, winter (*Raja ocellata*) (*R. diaphanes*; big Atlantic skate; eyed skate; spotted skate)
C 1902–05: 82 (N.S.); **1918–20**: 125 (description; uses; analyses); **1**: 413 (body temperature); **6**: 315 (respiratory system); **7**: 1 (pancreatic secretion), 11 (gastric juice urea content), 17, 31, 439 (hormones effect on circulation), 447 (temperature & drugs effect on gastric motility); **8**: 137 (temperature re tissue survival time), 145 (drugs effect on intestinal motility), 207 (arterial structure & stimulation)
J 1: 239 (stomach nerve physiology), 251, 497 (gastric secretions), 261 (claspers function)
B 155: 58 (full description)
AF 12e: 22 (description)
S 99 (pancreatic secretion); **154** (egg capsule); **234** (Malpeque Bay, P.E.I.)

Skates (general)
B 59, 89 (liver oil characteristics & uses; *see* their indexes); **68R**: 28, 84 (key & descriptions of Canadian Pac.); **155** (key & descriptions of Canadian Atl.)
PRP 25: 9 (key & descriptions of, B.C.); **26**: 17 (liver oils vitamin A); **111**: 20 (B.C. trawl landings for mink feed)
AF 12e: 22 (descriptions of Canadian Atl.)
S 17: 5 (insulin from); **18**: 3 (Langerhans islets re insulin); **101** (heat capacity of muscle); **851**: 48 (B.C. fishery)
SS 478 (various effects on blood osmotic pressure)

Skeena River, B.C. (*see also* Babine River; *also* following two subjects, *and* Pacific salmon species)
J 8: 82 (limnology), 178 (climatology re sockeye salmon), 453 (sockeye escapement & distribution); **12**: 451 (salmon fishery), 499 (watershed freshwater fishes; correction on page 942); **15**: 331 (sockeye age & size), 1007 (sockeye production re spawning stock), 1103 (pink salmon production); **16**: 91 (3-year-old pinks); **17**: 655 (salmon downstream migration)
B 86 (falls as salmon migration hazard); **93** (harbour seals)

PRP 8: 6 (general sockeye salmon survey program); **61**: 8, **65**: 77, **70**: 13, **75**: 40, **80**: 50 (sockeye tagging off mouth); **65**: 77 (inshore salmon tagging); **72**: 36 (harbour seal life history, predation & control); **75**: 46 (1947 sockeye run); **75**: 54, **76**: 72 (oceanography of approaches); **89**: 78 (marked sockeye recoveries); **94**: 5 (sockeye exploitation seasonal variations)
CNG 14 (1948 salmon catch prediction)
S 287 (salmon conservation); **453** (sockeye abundance & exploitation); **851**: 10 (salmon fishery, 1906–60)
SS 892 (salmons investigation)

Skeena River drainage system lakes (*see also* Babine Lake; Lakelse Lake)
J 12: 499 (more complete data on fishes and lakes listed just below)
PRP 66: 12, **67**: 23, **68**: 55, **69**: 70, **70**: 10, **72**: 28, **74**: 6, **74**: 9, **78**: 6 (a series on limnology, salmons & their predators; other fishes, etc., for the following lakes, respectively: Lakelse; Maurice; Kitwanga; Kitsumgallum; Bear; Sustut & nearby lakes; Morrison; Swan & nearby lakes; Babine)

Skeena River salmon fisheries management committee (*see also* the Annual Reports of the Board)
PRP 101: 5 (first meeting; objects)

Skeleton (*see* Bone; Cranium; Osteology; Otoliths; Teeth; Vertebrae, etc.)

Skidegate Inlet, B.C.
PRP 59: 10 (flatfishes)

Skilfish (*Erilepis zonifer*) (giant skilfish)
J 16: 384 (records off B.C.)
B 68: 241, **68R**: 241 (full description)

Skilfish, giant (*see* Skilfish)

Skin (*see also* Leather; Pigment; Scales; Skinning; Slime)
J 2: 439, 457, 461, 463, 473 (proximate analyses of canned salmons, canned pilchard, fresh lingcod); **16**: 421 (nucleic acids of sockeye salmon); **17**: 913 (collagen in Pac. herring); **18**: 483, 495 (% of, from Atl. fishes); **21**: 1083 (histology of Pac. lamprey)
PRA 2: 3 (gastric stimulant for man); **73**: 3 (glue & guanine from)
PRP 3: 5 (glue from); **19**: 20 (composition & nutritive value in canned fish); **35**: 6 (sunburn of: trout); **55**: 7 (stinging of human, by jellyfish); **61**: 13 (fish proteins causing lesions on human); **63**: 45, **71**: 5 (uses for); **75**: 48 (composition of: freshwater fishes)
CAG 1: 65 (ringed & bearded seals)
SS 703 (pigment of hagfish); **816** (rapid colour change of sculpin)

Skin-diving (*see* Diving)

Skinning
PRA 1: 13 (fillets); **35**: 20 (table for)

Skipjack (*see* Bonito, Atlantic; Saury, Atlantic; Tuna, skipjack)

Skipper (*see* Saury, Atlantic)

Skogsberg, Tage
SS 477 (recommended method of reporting seawater analyses)

Skud, Bernard Einar
J 15: 1329 (Passamaquoddy Bay herring migrations, N.B.)

Skull (*see* Cranium)

Slastenenko, Efim Petrovich
J 11: 652 (hybrid char relative growth)

Slavin, Joseph William
SS 1372 (chilling & freezing fish on vessel)

Sleggs, George Frederick
NRB 2 (capelin economic biology)

"Slick" on water surface
CPO 1964-1 (Juan de Fuca Strait)

Slime (of fish)
C 4: 257 (flora of haddock); **8**: 275 (flora of various fishes)
PRA 55: 3 ("sliming" of light-salted fish); **56**: 5 (re plant sanitation control)
PRP 96: 11 (indigenous bacteria of)
S 114 (bacteria of)
SS 846 (re spoilage)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Slope water (*see* Oceanography, Atlantic, (NW open waters))

Smedley, Enid Mary

C 8: 169 (nematodes parasitic on fishes)

Smell, sense of (*see* Odour; Odours; Taste)

Smelt, American (*Osmerus mordax*)

C 1902–05: 91 (trematode parasites)

J 7: 94 (muscle & viscera thiaminase); **10:** 539, **11:** 894 (*Phocanema* parasite of); **14:** 856 (flesh nematodes); **15:** 1153 (investigations review), 1313, **16:** 815 (growth of); **17:** 713 (re tidal power project); **18:** 679 (osteology & phylogeny); **20:** 735 (Lake Huron distribution)

B 70 (N.B. fishery); **94:** 17 (arctic & subarctic); **144** (life history & fishery); **155:** 119 (full description)

PRA 34: 5, 7, **65:** 17 (grading); **35:** 24 (stream clearance for spawning); **39:** 11 (egg crowding effect on larvae)

PRC 1: 28, **2:** 37 (canning freshwater); **2:** 5 (Lake Erie prospecting & gear), 53 (size-grading equipment)

CCG 4: 10 (sausage; cakes; smoked); **5:** 1 (proximate composition)

CNG 64: 27, 72 (productive capacity)

CSG 15 (description)

S 41 (bacteriology); **54** (total weights); **234** (P.E.I.); **308** (tag for); **739** (Miramichi R. fishery, N.B.)

SS 781 (Great Lakes situation); **963** (thyroid function); **1259** (Atl. coast fishery); **1293** (midwater trawl, Lake Erie)

Smelt, arctic (*see* Smelt, toothed)

Smelt, black (*see* Blacksmelt, stout)

Smelt, herring (*see* Argentine, Atlantic)

Smelt, longfin (*Spirinchus dilatus*)

J 14: 655 (B.C. freshwater distribution)

B 64: 26 (life history, uses, etc., B.C.); **68:** 100, **68R:** 124 (full description)

SS 1208: 36 (description, in B.C. freshwater)

Smelt, pond (*Hypomesus olidus*)

J 18: 679 (osteology & phylogeny)

Smelt, Sacramento (*Spirinchus thaleichthys*)

J 18: 679 (osteology & phylogeny)

Smelt, sand (*see* Silverside, Atlantic)

Smelt, silver (*see* Smelt, surf)

Smelt, slender black (*see* Blacksmelt, slender)

Smelt, surf (*Hypomesus pretiosus*) (silver smelt)

J 18: 679 (osteology & phylogeny)

B 64: 15 (B.C. fishery); **68:** 98, **68R:** 125 (full description)

PRP 53: 9 (nutritive value); **37:** 17 (spiced delicatessen)

CNG 64: 49 (productive capacity)

S 453, 851: 55 (B.C. fishery)

Smelt, toothed (*Osmerus dentex*) (arctic smelt)

B 68R: 126 (full description)

CNG 64: 56 (possible fishery potential)

Smelt, whitebait (*Allosmerus elongatus*) (*A. attenuatus*)

J 18: 679 (osteology & phylogeny)

Smelts (*see also* Capelin; Eulachon)

B 64 (description & key of B.C. Osmeridae); **94:** 17 (arctic & subarctic distribution)

Smith, Donald Gilbert

J 16: 7 (Atl. coastal seawater composition; correction on page 930)

Smith, Elizabeth A.

C 2: 1 (lobster canning bacteriology & chemistry)

Smith, George Francis Maurice

J 5: 84 (factors limiting starfish distribution & size); **6:** 291 (lobster catchability); **12:** 698 (cod populations vertebral count); **20:** 1431 (coloured fish tags)

PRA 17: 7 (temperature re starfish distribution); **22:** 9, **25:** 10, **30:** 7 (lobster size considerations); **24:** 16 (lobster larvae); **28:** 3, 4, 5 (starfish growth; movements; removal), 7, **30:** 7 (lobster fishing intensity)

CCG 3: 17 (fish counting methods)

S 149 (starfish gonad parasite); **314** (electrofishing apparatus)

SS 922 (electrofishing apparatus)

Smith, Gertrude May

S 64 (decapod distribution, Sydney, Vancouver Is.); **72** (littleneck clam ecology);

73 (butter clam ecology); **74** (Pac. clams feed & growth rate)
SS 461 (Pac. clams ecology, feed & growth)

Smith, Louis Falconer
C 7: 165 (glue from B.C. fish wastes)
PRP 3: 5, **7:** 6, **9:** 23 (glue production from B.C. fish wastes)

Smith, Lynwood Stephen
J 21: 711 (salmon blood sampling technique)

Smith, Manning A.
S 639 (colorimetric lampricide concentration determination); **766** (halonitrophenol lampricides physical properties)
SS 1277 (sea lamprey larvicide)

Smith, Michael
J 20: 95 (sockeye salmon survival following gonad development; correction on **21:** 1553); **20:** 1457 (migrating salmon olfactory perception); **21:** 635 (fish pituitary removal technique), 641 (bacteria amino acids re bacteria taxonomy)
S 823 (*Cancer* deoxyribonucleic acids); **844** (marine Mollusca deoxyribonucleic acid); **846** (juvenile salmon olfactory perception); **865** (deoxyribonucleoside phosphates synthesis & hydrolysis); **880** (Pac. oyster nucleotides)
SS 1306 (preparation of adenosine-5′-triphosphate); **1307** (preparation of uridine-5′-phosphate); **1308** (ribonucleoside cyclic phosphates); **1343** (synthesis of uridyl-adenosine); **1373** (preparation of nucleotides & derivatives)

Smith, Morden Whitney
J 1: 67 (fertilized pond physical & biological conditions); **5:** 138 (*Scapholeberis* cladoceran populations periodicity); **7:** 22 (killifish & perch feed re supply); **8:** 340 (Kerr L. whitefish, N.B.), 383 (N.B. lakes limnology & trout angling); **12:** 210 (fertilization & predator control to improve trout angling), 238 (American eel in Maritimes freshwaters); **15:** 1403 (brook trout movements in fresh & salt waters); **16:** 887 (phosphorus enrichment of drainage waters; correction on **17:** 943); **17:** 677 (deferring season to improve trout angling); **18:** 463 (brown-water lake limnology); **20:** 327 (pond formation & brook trout movements)
PRA 3: 7, **4:** 14, **17:** 10, **43:** 3 (fertilizing water); **17:** 8 (destruction of undesirable fish with copper sulphate); **20:** 6, **26:** 6, **36:** 6, **42:** 7 (fish production in various Martimes lakes); **32:** 3 (black bass); **35:** 16 (trout fingerling movement); **38:** 3, **58:** 21 (speckled trout production from P.E.I. pond); **43:** 9 (trout movement in P.E.I. stream); **47:** 3 (rock formation re trout productivity)
CSG 8 (poisoning trout lakes)
S 137, 198, 213 (Lake Jesse, N.S., fish populations & limnobiological survey); **138, 229, 242, 311** (poisoning lake fishes with copper sulphate or rotenone); **159** (3 Passamaquoddy Bay rare fishes); **166** (ciliate *Chilodon* feed selection); **185** (*Daphnia* feed in fertilized water); **206** (3 N.S. lakes fish populations); **278** (P.E.I. Park ponds biological reconnaissance); **297** (Crecy L. fertilization, N.B.); **318, 321** (P.E.I. speckled trout fishery & habits); **341** (Crecy L. fertilization & predator control); **384** (electrofishing in P.E.I. stream); **385** (speckled trout hatchery planting); **418** (eel control); **419** (P.E.I. trout standing crops); **435** (trout counting fences operational efficiency); **459** (trout angling & predator control); **488** (tagged vs. untagged brook trout survival & growth); **489** (trout & salmon hydrostatic tag); **574** (P.E.I. trout fishery); **689** (Canadian fish ponds); **709** (improving brook trout production); **763** (trout utilization of bottom fauna in a fertilized lake); **779** (brook trout transplantation); **841** (Canadian Maritimes limnology); **868** (planting brook trout in estuaries)
SS 441, 508 (fertilization of experimental ponds); **569** (N.B. & N.S. freshwater Cladocera & Copepoda); **654** (hatchery disease control); **664** (trout stocking); **767** (Lake Jesse salmon, N.S.); **861, 895** (coarse fish removal improves trout angling); **899, 947** (P.E.I. trout); **977** (Ellerslie experimental trout pond, P.E.I.)

Smith, P. W. P.
S 41 (marine fish bacteriology)

Smith, Stanford Henry
J 14: 599 (coregonids evolution & distribution); **19:** 1013 (Lake Erie longjaw cisco)

Smith, Stuart Boland
J 12: 742 (Kamloops trout scale diameter vs. body length); **17:** 739 (steelhead trout stocks, Capilano R., B.C.)

Smith, Verna Zora (*see also* Lucas, Verna Zora)
J 9: 16 (Vancouver Is. Ostracoda)

Smith Inlet, B.C.
J 18: 907 (oceanography)
PRP 49: 11 (slow-growing herring); **75:** 31, **82:** 9 (sockeye salmon)
S 453, 851: 14 (sockeye abundance & exploitation)

Smith Sound, Canadian Arctic
J 14: 731 (oceanography & currents)

Smoking and smoked products (*see also* "Bloater"; Brining; Haddies; Kipper; Kipper snacks)
C 1917–18: 175 (processing haddock), 179 (smoked haddock bacteriology); **3:** 469 (fish muscle tensile strength); **4:** 27 (smoke bactericidal action), 331 (haddock muscle tryptic hydrolysis)
J 3: 1 (preparing fillets for); **6:** 338 (smoke deposition on fish); **7:** 70 (effect on *Clostridium* bacteria)
B 47: 21 (herring); **59:** 425 (changes in oil)
PRA 4: 6, **9:** 4 (fillets & haddies); **12:** 7, 10, **13:** 3, 5 (fillets after drying); **19:** 7, **31:** 6, **34:** 10 (smokehouse & tunnels); **25:** 7 (eels); **36:** 19 (smoked fillets keeping qualities); **39:** 9 (principles of)
PRP 37: 7, **40:** 14 (keeping quality after light smoking); **40:** 6 (oysters for canning); **40:** 16, **56:** 4, **59:** 12, **65:** 73, **67:** 35, **75:** 35, **76:** 76, **78:** 18, **81:** 87 (mechanical-conveyor type equipment; tunnels; vertical kilns; fuels); **41:** 3, **42:** 10 (salmon for canning & delicatessen); **45:** 18 (abalone for canning); **46:** 3, **53:** 9, **57:** 11 (sablefish); **52:** 3, **53:** 9, **57:** 11, **59:** 12, **63:** 38, **65:** 73, **66:** 9, **72:** 33 (herring for canning, kippering & delicatessen); **63:** 38 (pastes); **63:** 41, **77:** 108 (anchovy for canning & pastes); **67:** 35 (transparent model of cross-ventilated tunnel)
CCG 4: 10 (freshwater fish specialty products)
CFI 4 (shad for canning); **6** (herring fillets for kippered snacks); **13** (sardines for canning)
CGR 5, 6, 7 (smoke production & smokehouses)
CHO 25 (smoke-producing equipment); **26** (kippers; smokehouse construction); **29** (cod fillets; smokehouse construction); **35** (smokehouses & smoke production); **37** (maggot prevention in bloaters); **38** (herring for bloaters); **39** (haddock for finnan haddie)
CVI 5 (B.C. salmon delicatessen); **7** (lingcod fish loaf & salmon delicatessen); **15** (effects on nutritive values)
CVG 22 (list of Board & some other publications on)
S 31 (haddock muscle tensile strength); **102** (re decomposition); **135** (tunnel air velocity anemometers); **417** (yeast & mould inhibition); **742** (smoking problems)
SS 338 (preservative action); **643, 718, 812** (new smokehouse types); **1255** (Ont. sea lamprey); **1410** (freshwater fish)

Smolts (*see also* other subjects relating to young salmons)
J 15: 867 (size of sockeye), 961 (Babine area, B.C., sockeye production); **20:** 1355 (Atl. salmon smoltification)
PRP 91: 17 (estimating run size of sockeye), 21 (age, weight & length of sockeye); **93:** 30 (Lakelse L. sockeye); **99:** 30 (emigrant size of sockeye)
S 506 (size re change from parr, Atl. salmon); **884** (hemoglobin patterns in Pac. salmons)
SS 991 (transformation in salmons)

Smoothhead, baird's (*Alepocephalus bairdii*)
B 155: 99 (doubtful Canadian occurrence)

Smoothtongue (*Leuroglossus stilbius*)
J 18: 1167 (B.C. records)
B 68R: 128 (full description)

Smothering (*see also* Anoxia)
PRA 35: 3 (of clams)

Smyth, R. D.
SS 1358 (coenzyme B_{12} preparations)

Snail, eastern mud (*Nassarius obsoletus*)
J 21: 1155 (introduction & distribution in B.C.)

Snail, moon (*see Polynices*)

Snailfish, abyssal (*Careproctus ovigerum*) (abyssal liparid)
B 68: 302, **68R:** 348 (full description)

Snailfish, blacktail (*Careproctus melanurus*) (black-tailed liparid)
J 11: 502, **20:** 1095 (B.C. records)
B 68: 304, **68R:** 350 (full description)

Snailfish, lobefin (*Polypera greeni*) (Green's liparid)
B 68: 301, **68R:** 347 (full description)

Snailfish, longfin (*see* Seasnail, longfin)

Snailfish, marbled (*Liparis dennyi*) (Denny's liparid)
B 68: 299, **68R:** 345 (full description)

Snailfish, polka-dot (*see* Seasnail, polka-dot)

Snailfish, prickly (*Paraliparis deani*) (prickly liparid)
B 68: 305, **68R:** 350 (full description)

Snailfish, ribbon (*Liparis cyclopus*) (Gunther's liparid)
B 68: 297, **68R:** 343 (full description)

Snailfish, ringtail (*Liparis rutteri*) (ring-tailed liparid)
B 68: 295, **68R:** 341 (full description)

Snailfish, shorttail (*Liparis pulchellus*) (continuous-finned liparid)
B 68: 300, **68R:** 346 (full description)

Snailfish, slipskin (*Liparis fucensis*) (Juan de Fuca liparid)
B 68: 298, **68R:** 344 (full description)
S 290 (Queen Charlotte Is. record)

Snailfish, smalldisk (*Careproctus gilberti*) (small-disked liparid)
B 68: 303, **68R:** 349 (full description)

Snailfish, spotted (*Liparis callyodon*) (Pallas's liparid)
B 68: 296, **68R:** 342 (full description)

Snailfish, tadpole (*Nectoliparis pelagicus*) (tadpole liparid)
B 68: 306, **68R:** 352 (full description)

Snailfish, tidepool (*Liparis florae*) (shore liparid)
B 68: 297, **68R:** 340 (full description)
S 290 (first B.C. record)

Snails, freshwater (*see also* Fauna, freshwater invertebrate; Gastropoda)
SS 714 (*Campelona* life cycle)

Snails, marine (*see* Gastropoda; *Polynices*; Whelks)

Snakeblenny, fourline (*Eumesogrammus praecisus*)
J 8: 36 (Hudson Bay), **9:** 122 (Ungava Bay)
B 155: 308 (full description)

Snakeblenny, Pacific (*see* Prickleback, snake)

Snakes
C 2: 149 (water snake in SW Ont. stream); **2:** 47 (garter: feeding on salmon fry)
SS 489 (garter: a melanistic)

Snapper, flag (*see* Rockfish, flag)

Snapper, rasphead (*see* Snapper, red)

Snapper, red (*Sebastodes ruberrimus*) (rasphead rockfish; rasphead snapper; red cod; red rockfish)
J 4: 367 (spoilage bacteria trimethylamine generation), 472 (liver & intestinal oils vitamins A & D); **5:** 154 (fillet preservatives); **7:** 41 (flesh protein biological value), 505 (internal copepod parasite), 513 (flesh amino acids); **8:** 74 (heat browning of flesh)
B 59, 89 (oils & their vitamins; *see* their indexes); **68:** 220, **68R:** 268 (full description)
PRP 26: 17, **36:** 22, **48:** 9 (liver & visceral oils & vitamin A); **37:** 7, **65:** 73 (smoked); **52:** 18 (fecundity); **53:** 9

(nutritive value); **56**: 7 (dehydrated); **73**: 58 (bonemeal; waste flesh recovery); **92**: 23, **98**: 3 (flesh ribose re browning reaction); **111**: 3 (effect of explosion on)
S 81 (muscle creatine); **82** (arginase in organs); **841**: 46 (B.C. fishery & prospects)

Snig (*see* Tomcod, Atlantic)

Snow (*see also* Dilution effect; Storms; Weather)
PRA 24: 9 (bacteria content)
PRP 30: 6 (alpine: reddened by algae); **35**: 18 (vs. ice for refrigerative capacity)
SS 577 (alpine: reddened by algae)

Snow, James Murray
J 6: 403 (iced eviscerated cod spoilage); **7**: 561, **8**: 195 (preventing bacterial reduction of trimethylamine oxide); **7**: 585 (extracting fish protein fractions), 594 (fish protein colorimetric estimation), 599 (myosin freezing denaturation); **8**: 309 (trimethylamine oxide estimation)
PRA 37: 3 (iced gutted cod spoilage)

Soap (*see also* Saponification)
B 59, 89 (from marine animal oils; *see* their indexes)
PRA 59: 27 (from polymerized seal oil)
PRP 21: 18, **25**: 13 (from pilchard oil); **36**: 14, **46**: 12 (for vitamin A concentration)

Sociology
S 527 (effects from quota control)

Sockeye salmon (*see* Salmon, sockeye; *also* Kokanee)

Sodium compounds (*see also* following two headings; *also* Mineral constituents; Phosphates; Salinity; Salt, common)
J 13: 273 (ratio to K and Ca ions in river-diluted fiord waters); **16**: 7 (ratios to other ions in Atl. coastal seawaters); **17**: 323 (in tissues of maturing coho salmon)
PRP 101: 17 (in salmon & tuna canned without added salt); **104**: 19 (in fish held in chilled seawater); **105**: 19 (in commercial fresh fish flesh); **114**: 19 (in frozen albacore)
S 434 (in flesh of B.C. fishes); **478, 516, 533** (bacteria requirement for); **547** (variations in migrating Pac. salmons flesh); **615** (in fish held in refrigerated seawater)

Sodium nitrate (*see also* Nitrate)
J 6: 233 (re flesh products preservative); **7**: 461 (bacterial reduction to nitrite)

Sodium nitrite as preservative (*see also* Nitrite)
J 5: 36, **7**: 155, **13**: 207 (in ice for dressed or filleted fish); **5**: 148 (also potassium nitrite, in brine dips), 244 (with sodium phosphate in ice), 265 (as reducing agent bacteriostat), 276 (as "dun" fungistat); **6**: 17 (as haliphilic bacteria inhibitor), 63 (effect on cats & rats re safety as preservative), 74, 233, 257, **7**: 221, **10**: 69, **13**: 207, **14**: 773, **16**: 13 (inhibitor of fish spoilage bacteria); **6**: 414 (colorimetric determination of); **7**: 101 (as corrosion inhibitor), 421, 461, **8**: 202, **14**: 775 (re trimethylamine production during spoilage); **7**: 461, 528, 536, **9**: 148 (reduction by bacteria); **13**: 210 (bacterial production of nitrite in hydroxylamine-treated fillets), 559 (in spoilage assessment of cod fillets), 873 (as preservative during viscera processing); **16**: 539 (factors affecting use with fillets)
B 100: 34 (details for use with fresh fish); **103** (dips for fish on trawlers)
PRA 56: 14 (in dips for fillets)
PRP 39: 13, **43**: 10 (for fillets); **40**: 14 (effect on flesh colour); **41**: 15, **67**: 36, **71**: 15 (in ice & ice glaze); **42**: 10 (for salmon delicatessen); **44**: 12, **71**: 15 (in dips); **44**: 16, **47**: 5, **83**: 35 (spoilage retardation); **59**: 7 (corrosion-preventative germicidal spray); **83**: 35 (pro-oxidant effect on frozen flesh); **93**: 23 (effect on antibiotic); **95**: 39 (in chilled seawater; correction on **96**: 10)
S 222 (uses; applications; regulations); **337** (compared to antibiotics); **370**: 6 (review)
SS 734 (early tests)

Sodium phosphates (*see* Phosphates)

Softness (*see* Firmness)

Soils
J 14: 33 (organic substances leachable to natural waters)

Solandt, Donald Y.
SS 555 (seal blood respiratory characteristics)

Solandt, Ormond McKillop
SS 555 (seal blood respiratory characteristics)

Sole (*Solea vulgaris*) (*see also* Flounder, witch)
S 41: 31 (bacteriology)

Sole, arrowtooth (*see* Flounder, arrowtooth)

Sole, butter (*Isopsetta isolepis*) (scaly-finned flounder)
B 68: 322, **68R**: 195 (full description)
PRP 40: 3 (key relation to flatfishes); **59**: 10 (Queen Charlotte Is.); **61**: 6, **68**: 43 (liver, liver oil & vitamin A); **62**: 10 (common names); **66**: 20, **70**: 23 (tagging); **67**: 36 (quality preservation); **78**: 3 (scale age reading); **111**: 20 (landings in B.C. for mink feed)
CNG 4 (nomenclature); **64**: 47 (productive capacity); **30** (biology, stocks & catches, Hecate Strait)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (oil & vitamin A in liver)
S 290 (first published B.C. record)
SS 389, 453 (in B.C. trawl fishery); **851**: 42 (B.C. fishery history & prospects); **852** (age & growth rate)

Sole, C-O (*Pleuronichthys coenosus*) (pop-eye)
C 1: 290 (feed of)
B 68: 320, **68R**: 192 (full description)
PRP 40: 3 (key relation to flatfishes); **62**: 10 (common names); **68**: 43 (liver, liver oil & vitamin A)
CNG 4 (common names)
CNS 2, 5 (B.C. trawl catches by areas, 1948–54)
CVI 8 (oil & vitamin A in liver)
S 290 (W coast Vancouver Is.)

Sole, curlfin (*Pleuronichthys decurrens*)
J 8: 375 (B.C. dispersion & growth)
B 68: 319, **68R**: 191 (full description)
PRP 40: 3 (key relation to flatfishes); **62**: 10 (common names); **68**: 43 (liver, liver oil & vitamin A)
CNG 4 (nomenclature)
CNS 6 (B.C. trawl catches by areas, 1951–53)
CVI 8 (oil & vitamin A in liver)

Sole, deepsea (*Embassichthys bathybius*)
B 68R: 201 (full description)

Sole, Dover (*Microstomus pacificus*) (slime flounder; slime sole; slippery flounder; slippery sole)
J 8: 375 (B.C. dispersion & growth); **21**: 335 ("milky" flesh condition)
B 68: 327, **68R**: 200 (full description)
PRA 40: 3 (key relation to flatfishes); **59**: 10 (Skidegate Inlet); **61**: 6, **68**: 43 (liver, liver oil & vitamin A); **62**: 10 (common names)
CNG 2 (utilization); **4** (common names); **64**: 47 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (oil & vitamin A in liver)
S 290 (Queen Charlotte Is.); **389, 453** (in B.C. trawl fishery); **851**: 43 (B.C. fishery history & prospects)
SS 1378 (tagging spawning stock)

Sole, English (*see* Sole, lemon)

Sole, flathead (*Hippoglossoides elassodon*) (paper sole)
C 1: 290 (feed of)
J 8: 374 (B.C. dispersal & growth)
B 68: 315, **68R**: 185 (full description)
PRP 40: 3 (key relation to flatfishes); **44**: 12 (fillet drip control); **62**: 10 (common names); **68**: 43 (liver, liver oil & vitamin A)
CNG 4 (common names)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (oil & vitamin A in liver)

Sole, forkline (*Inopsetta ischyra*)
B 68R: 196 (full description)

Sole, gray (*see* Flounder, witch)

Sole, lemon (Atlantic) (*Pseudopleuronectes dignabilis*) (*see also* Flounder, winter)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit. London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series*. **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière, **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

NSB 14: 19 (life history, as Georges Bank flounder, Nfld.)

Sole, lemon (Pacific) (*Parophrys vetulus*) (English sole)
C 1: 290 (feed of); **7**: 465 (reaction to sound)
J 7: 35 (flesh protein biological value), 51 (protein sulphur distribution), 74 (flesh B vitamins), 552 (bacteriological peptones from); **8**: 479 (effect of tagging); **10**: 459 (population estimation); **12**: 134 (corrosion of tags on); **13**: 357 (catch re temperature), 647 (survival rate); **21**: 765 (trimethylamine oxide & betaine precursors in)
B 68: 321, **68R**: 194 (full description); **119** (stratified sampling; stock size estimation; immigration; emigration); **126**: 29 (changes on storage in refrigerated seawater); **139** (Strait of Georgia trawl fishery)
PRP 40: 3 (key relation to flatfishes); **59**: 10 (Skidegate Inlet); **59**: 15, **62**: 7, **67**: 36 (iced fish & fillet quality); **61**: 6, **68**: 43 (liver, liver & viscera oil, vitamin A); **62**: 10 (common names); **63**: 35, **72**: 24, **86**: 13, **87**: 27 (age & length composition; growth rate); **67**: 31, **68**: 51, **70**: 23, **85**: 75, **104**: 11 (tagging & returns); **68**: 48 (spawning grounds); **73**: 58 (flesh recovery from processing wastes), 68 (development & fecundity); **84**: 64 (winter trawl fishery); **105**: 11 (flesh "milkiness" re stock density); **111**: 3 (effect of explosion on), 20 (B.C. landings for mink feed)
CNG 4 (common names); **61** (re trawl mesh regulations); **64**: 47 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas 1945–63)
S 290 (B.C. range extensions); **389**, **453** (in B.C. trawl fishery); **434** (flesh Na & K content); **618** (new nematode parasite); **851**: 39 (B.C. fishery history & future prospects)

Sole, longfin (*see* Sole, rex)

Sole, northern (*see* Sole, yellowfin)

Sole, paper (*see* Sole, flathead)

Sole, petrale (*see* Brill (Pacific))

Sole, rex (*Glyptocephalus zachirus*) (longfin sole; witch)
J 8: 375 (B.C. dispersion & growth)
B 68: 326, **68R**: 202 (full description)
PRP 40: 3 (key relation to flatfishes); **59**: 10 (Skidegate Inlet); **61**: 6, **68**: 43 (liver, liver oil & vitamin A); **62**: 10 (common names)
CNG 4 (common names); **64**: 47 (productivity capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (oil & vitamin A in liver)
S 290 (B.C. range extensions); **389** (in B.C. trawl fishery)

Sole, rock (*Lepidopsetta bilineata*) (roughback sole)
C 1: 290 (feed of); **8**: 161 (nematode infection)
J 13: 357 (catch re temperature); **21**: 1531 (fertilized eggs demersal quality), 1533 (egg development rate)
B 68: 317, **68R**: 197 (full description); **139** (role in Strait of Georgia trawl fishery)
PRP 40: 3 (key relation to flatfishes); **59**: 15 (iced fish & fillet quality); **61**: 6, **68**: 43 (liver, liver oil & vitamin A); **62**: 10 (common names); **70**: 23 (tagging); **76**: 88 (spawning grounds); **87**: 27 (age & length composition); **92**: 21 (quality when frozen at sea); **111**: 3 (effect of explosion on)
CNG 4 (common names); **64**: 47 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
CVI 8 (oil & vitamin A in liver)
S 202 (acanthocephalan parasite); **290** (W coast Vancouver Is.); **389**, **453** (in B.C. trawl fishery); **851**: 41 (B.C. fishery history & prospects)

Sole, roughback (*see* Sole, rock)

Sole roughscale (*Clidoderma asperrimum*)
B 68R: 190 (full description)

Sole, sand (*Psettichthys melanostictus*)
J 8: 374 (B.C. dispersion & growth)
B 68: 313, **68R**: 189 (full description)
PRP 40: 3 (key relation to flatfishes); **59**: 10 (Skidegate Inlet); **62**: 10 (common names); **68**: 43 (liver, liver oil & vitamin A); **73**: 70 (spawning population)
CNG 4 (common names)

CNS 1–11 inclusive, **13** (B.C. trawl catches, 1945–63)
CVI 8 (oil & vitamin A in liver)
S 290 (W coast Vancouver Is.); **389** (in B.C. trawl fishery)

Sole, slender (*Lyopsetta exilis*) (slender flounder)
J 8: 375 (B.C. dispersion & growth)
B 68: 314, **68R:** 187 (full description)
PRP 40: 3 (key relation to flatfishes); **62:** 10 (common names); **48:** 63 (liver, liver oil & vitamin A)
CNG 4 (common names)
CNS 2 (B.C. trawl catches by areas, 1950–54)
CVI 8 (oil & vitamin A in liver)
S 290 (W coast Vancouver Is.)

Sole, slime (*see* Sole, Dover)

Sole, slippery (*see* Sole, Dover)

Sole, yellowfin (*Limanda aspera*) (northern sole)
C 1: 290 (feed of)
B 68: 323, **68R:** 198 (full description)
PRP 40: 3 (key relation to flatfishes); **59:** 10 (Skidegate Inlet); **62:** 10 (common names); **68:** 43 (liver, liver oil & vitamin A)
CNG 4 (common names)
CNS 1, 5, 6, 9, 13 (B.C. trawl catches by areas)
CBI 8 (oil & vitamin A in liver)

Solea vulgaris
S 41: 31 (bacteriology of)

Soles (Atlantic) (*see also* Flounder, witch; Sole, lemon (Atlantic); ***Solea vulgaris***)
PRA 40: 7 (chlorinated dip for fillets); **73:** 4 (skins for glue)

Soles (Pacific) (*see also* preceding Sole entries; *also* Flatfishes; Flounder)
B 68R: 182 (descriptions)
PRP 19: 20, **53:** 9 (nutritive values); **40:** 3 (key to B.C. species); **61:** 6, **68:** 43 (livers, liver oils & vitamin A); **62:** 10 (common names); **111:** 20 (B.C. landings for mink feed)
CNG 4 (common names)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas)
CVI 8 (liver oils & vitamin A); **11** (essential amino acids in offal, meal & stickwater)

Solubles, condensed (*see also* Hydrolysates; Stickwater)
J 7: 563 (amino acids & nitrogen in); **16:** 561 (viscosity & enzyme treatment of herring & whale), 685 (production & properties of herring, etc.)
PRP 77: 97 (amino acids in); **79:** 37, **103:** 18 (vitamin B_{12} in); **93:** 20, **96:** 16 (herring, re ruminant cellulose digestion); **94:** 27, **101:** 27, **111:** 23, **113:** 3 (herring: nutritive values, vitamin B_{12}, chick tests; correction on **J 16:** 931); **101:** 6, 10, **105:** 27 (preservation & processing); **101:** 27 (whale); **103:** 16 (shrimp)
CVG 21 (viscosimeter comparisons of pumpability of herring); **24** (amino acids in Atl. & Pac. herring)
S 310 (vitamin B_{12} in); **377** (promoting cellulose digestion by rumen bacteria); **407, 408, 601** (production from herring stickwater)

Somerville, Glasier Mitchell
CSG 30 (scallop exploration)

Somniosus microcephalus (*see* Shark, Greenland; Shark, Pacific sleeper)

Somniosus pacificus (*see* Shark, Pacific sleeper)

Sooke, B.C.
B 31: 8, **40:** 23, **74:** 4 (tagging Pac. salmons)

Sorbic acid
PRP 99: 22 (mould inhibitor)
S 417 (yeast & mould inhibitor for smoked fish)

Sorting
PRP 79: 41 (apparatus for shrimp)

Sound (*see* Swim-bladder)

Sound, reaction to (*see also* Echo sounding; Guiding)
C 7: 465 (by fishes)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

J 11: 130 (tones & frequencies re hearing in fishes)
PRP 13: 14 (conditioned reflexes re feed); **99:** 24 (deflecting sockeye salmon fingerlings)

Sound production by fish
SS 1284 (Atl. cod)

Sound-scattering layer
J 17: 211 (vertical migration of organisms causing)
S 757 (cause & applications)

Sound speed in water
S 855 (precision of data for seawater)

Sounding (*see* Echo sounding; Hydrography; Limnology; Oceanography)

Soup
PRP 81: 83 (canned oyster)

South Bay, Manitoulin Island, Ont.
J 13: 631 (bass population estimation)

Southcott, Burnett Anne
J 10: 64 (fishery products vitamin B_{12}); **16:** 791, **17:** 811 (dogfish flesh keeping quality); **19:** 615 (antibiotics effects on fish quality tests); **21:** 37 (irradiation of refrigerated brines)
PRP 83: 35 (antibiotics as preservatives); **85:** 83, **87:** 42 (fish meals & condensed solubles nutritive values); **88:** 67 (rancidity control); **95:** 45 (vitamin B_{12} in marine invertebrates & seaweeds); **110:** 16 (tetracycline antibiotics as preservatives); **112:** 15 (chlortetracycline in refrigerated seawater as preservative), 21 (chlortetracycline incorporation in ice from hard waters)
CVG 31 (moisture loss from cartoned frozen fish)
S 310 (fishery products vitamin B_{12}); **337** (antibiotics as flesh preservatives); **467** (B_{12} synthesis by clam bacteria); **468** (cooking effect on chlortetracycline residues in fish); **514** (tetracycline preservatives comparative effectiveness); **638** (Mg re bacteria sensitivity to antibiotics)

Southgate River, B.C.
J 14: 490 (dilution effect on Bute Inlet)

Southward, Eve C.
SS 1344 (new arctic Pogonophora)

Southward, Glen Morris
J 19: 335 (photographing halibut otoliths), 339 (calculating halibut lengths from otoliths)

Spalding, David Joseph
J 21: 415 (sea lion growth & age)

Spanish flag (*see* Rockfish, flag)

Spanish trawling
SS 1224 (pair-trawling operation)

Spantickle (*see* Stickleback, threespine)

Sparks, Albert Kirk
J 21: 205 (*Mytilicola* parasite in mussel)

Sparks, Henry Munro Irving
C 2: 95 (marine animal high temperature tolerances); **4:** 443 (N.S. mackerel spawning & development)

Sparrow, Roger Arthur Hugh
J 21: 1325 (*Mysis relicta* in Kootenay L., B.C.)

Spat; Spatting; Spat collectors (*see* Oyster)

Spawning (The following listings are not exhaustive; many other references to spawning are included under other subjects such as Eggs; Hatcheries; Life cycle and history; Maturity; Migration; Predators; Propagation; Reproduction; Spawning beds; *also* under the names of fishes, and other animals that spawn, e.g. Oyster)
J 12: 775 (inconnu); **13:** 449, **15:** 1451; **18:** 31, **19:** 985, **20:** 1067, **21:** 203 (Atl. herring); **13:** 647 (lemon sole); **14:** 553 (sturgeon), 573 (kokanee), 953 (petrale sole); **15:** 275 (capelin), 1269 (Atl. halibut), 1313 (Atl. smelt); **16:** 283, **21:** 1317 (Pac. herring); **16:** 835, **18:** 337, **21:** 485, 657 (Pac. salmons); **17:** 541 (hybrid trout); **18:** 337 (counting Pac. salmon spawners from the air), 423 (lake trout); **19:** 113 (longnose sucker), 173 (rainbow trout), 985 (Atl. herring growth re hatching re spawning season); **20:** 417 (burbot), 1067 (underwater observation of Atl. herring), 1267 (pollock); **21:** 1385 (egg capacity of pink salmon spawning beds), 1523 (American & European eels breeding areas)

B 5 (lobster & cunner); **17, 47:** 2, **143:** 9 (B.C. herring); **21** (Atl. salmon); **22:** 15, **48, 60:** 6, **131:** 16 (Atl. oyster); **25:** 12 (haddock); **34** (Pac. osyters); **50, 53** (sockeye salmon); **54:** 17 (lingcod); **64** (Pac. smelt, eulachon & capelin); **111:** 11 (Atl. herring); **130:** 12 (swordfish); **135:** 17, **145:** 12 (Atl. scallops); **144:** 6 (Atl. smelt)

PRA 6: 5, **30:** 5 (lobster); **6:** 7, **8:** 6, **68:** 20, **70:** 16 (Atl. salmon); **13:** 10, **68:** 15 (Atl. cod); **15:** 10 (haddock); **35:** 24 (Atl. smelt)

PRP 8: 6, **70:** 13, **71:** 11, **75:** 40, 46, **78:** 6, **80:** 50, **90:** 3, **91:** 13, **97:** 31 (Babine R. & L. salmons); **5:** 13 (Cultus L. sockeye salmon); **10:** 5, **31:** 18, **33:** 3, **34:** 8, **53:** 20 (McClinton Creek pink salmon); **22:** 7 (Paul L. Kamloops trout); **36:** 12 (Cowichan R. system brown trout); **43:** 14, **62:** 4, **66:** 12, **70:** 13, **71:** 11, **75:** 40, 46, **80:** 50, **88:** 65, **104:** 34 (Lakelse L. salmons); **44:** 18 (eulachon); **47:** 19, **51:** 8, **62:** 14 (Cowichan R. system coho salmon); **61:** 16 (oyster); **64:** 61, **70:** 20, **113:** 6 (Nile Creek salmons); **66:** 4 (herring, Atl. compared to Pac.); **66:** 8, **74:** 28, **78:** 20, **80:** 57, **87:** 23, **93:** 13, **97:** 21, **111:** 9 (Pac. herring); **67:** 23, **68:** 55, **70:** 13, **71:** 11, **72:** 28, **74:** 6, 9, **75:** 40, 46, **80:** 50 (Skeena & Babine R. & lakes, other than Babine L. & Lakelse L.); **68:** 48, **73:** 70, **76:** 88 (soles); **75:** 31, **82:** 9 (Smith Inlet sockeye); **77:** 105, **79:** 33, **80:** 55, **88:** 70, **89:** 87 (Port John L. salmons); **82:** 9 (Rivers Inlet sockeye); **99:** 29 (brill); **111:** 18 (Jones Creek pink salmon)

CCG 5: 9 (sea lamprey); **6:** 4 (Great Slave L. longnose sucker)

CNG 9, 37, 42, 46, 50, 56, 60, 69, 70, 71, 72 (B.C. herring, extent of); **16** (Queen Charlotte Is. herring)

CSG 19 (Atl. herring, alewife & shad)

SS 73 (*Odontosyllis*); **126, 490, 865, 897** (B.C. herring); **127** (capelin); **205** (chum salmon on beaches); **337** (*Saxidomus* & *Paphia* clams); **520** (period of brook trout); **1049, 1338** (of herring as surveyed from the air)

Spawning beds (see also Life cycle and history; Maturity; Migration; Predators; Propagation; Reproduction; Spawning; *also* names of fishes, and other animals that spawn)

J 11: 933 (re salmon-egg oxygen supply; correction on **17:** 385); **12:** 706, **14:** 1027 (water seepage rate through)

PRP 99: 20 (oxygen supply to salmon redds); **103:** 14, **111:** 18 (artificial, for Pac. salmons)

S 163 (artificial, for Pac. salmons); **423** (B.C. herring)

SS 205 (chum salmon); **1104, 1105, 1157** (artificial, for Pac. salmons); **1258** (sampling errors re Pac. salmon eggs survival)

Spear (*see also* Harpoon)

CSG 13 (for eels), **17** (used for flounders)

Spear Lake, Indiana, U.S.A.

SS 1089 (angling management)

Spearfish (*see* Marlin, white)

Specialty products from fish, shellfish, etc. (*see* Cakes, fish; Delicatessen; Loaf, fish; Marinating; Nectar, clam; Pastes; Pickle; Sausage; Spiced products; Stew; Sticks, fish)

Speciation (*see also* Taxonomy and systematics; *also* following heading)

S 551 (*Oncorhynchus*, & origin); **802** (arctic phytoplankton successions)

SS 499 (rainbow trout)

Species differentiation (biochemical)

J 20: 101 (of salmonids by muscle myogen patterns)

S 884 (of young salmons by hemoglobin electropherograms)

Species differentiation (biological) (*see* Taxonomy and systematics)

Species, indicator (*see* Indicator species)

Species, introduced (*see* Exotics; Transplantation)

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Species, new

C 1906–10: 215 (*Asemichthys taylori* sculpin); **1911–14(I)**: 39 (*Mayerella limicola* caprellid); **1918–20**: 181 (algae); **1**: 95 (*Hydractinia laevispina* hydroid); **2**: 507 (Protozoa); **3**: 13 (Isopoda); **6**: 215 (*Scolectimorpha huntsmani* copepod), 391 (B.C. trout subspecies); **7**: 213 (Protozoa), 277 (*Haplobranchus atlanticus* polychaete), 319 (*Allolumpenus hypocromus* blenny), 335 (*Paralithodes rostrofalcatus* crab); **8**: 71 (*Philonema oncorhynchi* nematode)

J 4: 53 (*Paphia bifurcata* mollusc); **7**: 128 (*Microbacterium piscarium*); **10**: 85 (*Micronereis nanaimoensis* polychaete); **11**: 454 (Polychaeta), 543 (stoneflies), 816 (*Tisbe celata* copepod); **13**: 541 (*Aricidea lopezi* polychaete); **18**: 592, 595, 596 (3 Canadian Arctic marine flagellata); **21**: 355 (*Pagurus arcuatus* decapod), 555 (*Conchoecia alata minor* ostracod subspecies), 873 (*Caligus clemensi* parasitic copepod), 933 (*Pholis clemensi* gunnel)

S 4 (*Spirontocaris zebra* shrimp); **9** (*Cyclocypris castanea* ostracod); **11**: (*Raphidiophrys magna* heliozoon); **28** (B.C. Protozoa); **49** (B.C. Nudibranchiata); **65** (*Leptochaetopterus pottsi* chaetopterid); **76** (B.C. dinoflagellates); **88** (*Laboea cornucopiae* ciliate); **94** (*Choniosphaera cancrorum* copepod); **199** (*Rhamphobrachium longisetosum* annelid); **202** (*Echinorhynchus lageniformis* acanthocephalid); **312** (*Diaptomus manitobensis* copepod); **544** (*Lecithophyllum anteroporum* parasitic trematode); **550** (*Woloszynskia limnetica* dinoflagellate); **563** (*Caliperia brevipes* ciliate); **618** (*Cucullanus annulatus* nematode); **748** (*Urceolaria karyodactyla* ciliate); **872** (6 *Allocapnia* stoneflies)

SS 59 (mayflies); **70** (actinians); **87** (cestode); **120** (*Sebastodes babcocki*); **132** (*Ceratomyxa acadiensis* myxosporidian); **140** (*Halimedusa*, a new genus of Anthomedusa); **203** (B.C. W coast molluscs); **420** (new Capitellidae genus of polychaetes); **421** (*Nebaliella caboti* crustacean); **501, 502** (*Ophiobolus* fungus); **562** (Nuculanidae clams); **565, 566, 662** (stoneflies); **572** (2 *Lumpenus lampetraeformis* snake blenny subspecies); **601** (Zoarcidae); **660** (*Salminicola salvelini* parasitic copepod); **1344** (*Galathealinum* beardworm)

Species, relict (*see* Fauna, relict)

Specific gravity

C 6: 386 (muscle of Atl. fishes)

J 4: 461 (B.C. herring, to assess fatness condition); **8**: 164 (Pac. salmon fry)

B 59, 89 (marine animal oils & their derivatives; *see* their indexes)

PRP 32: 17, **36**: 16 (re bulk measurement of pilchard & herring oils); **63**: 43 (liver & offal oils)

SS 698, 728 (re bulk measurement of oils & other liquids)

Specific heat (*see* Heat, specific and latent)

Specifications (*see also* Mesh; Nets)

B 89: 375 (for commercial marine animal oils & vitamin oils)

Speed of swimming

J 7: 169 (temperature effect on goldfish), 432 (salmon & eel in circular current); **8**: 67 (fin-clipping effect on); **11**: 153 (response to temperature); **15**: 587 (young salmon); **17**: 689 (Atl. herring, as observed by television); **19**: 1025 (re Pac. salmons energy requirements); **21**: 1183 (re young sockeye salmon respiratory metabolism)

B 114: 15 (salmon fingerlings)

S 503 (re sockeye environmental stress); **628** (re water temperature)

SS 175 (re sockeye passing Hell's Gate); **1321** (re young salmon oxygen uptake)

Speirs, J. Murray

B 110 (Board publications titles & index, 1901–54)

Spence, Clara Marion

C 4: 257 (haddock intestinal & slime flora)

Spencer, George Johnston

B 30 (Vancouver Is. Dungeness crab)

Sperm (*see also* Gonad; Milt; Testes)

J 8: 125 (salmonids: fertility after storage); **12**: 61 (albacore); **16**: 421 (sockeye salmon: nucleic acids; correction on page 930); **17**: 323 (coho salmon: composition), 913 (B.C. herring: collagen)

B 50: 3 (sockeye spermatozoon size)

PRP 14: 5 (artificial expression of sockeye); **45**: 23 (re natural spawning efficiency of Pac. salmon)

S 844 (molluscs: deoxyribonucleic acids)

Spermaceti
B 59, 89 (from sperm whales: characteristics of; *see* their indexes)
CVI 14 (utilizations)

Sphoeroides maculatus (*see* Puffer, northern)

Sphyrion lumpi (*see also* Copepoda, parasitic)
J 17: 9 (on redfish)

Sphyraena argentea (*see* Barracuda, Pacific)

Sphyrna tiburo (*see* Shark, bonnethead)

Sphyrna zygaena (*see* Hammerhead, smooth)

Spiced products (*see also* Delicatessen; Marinating)
PRP 37: 17 (surf smelt); **42:** 10 (chum salmon); **58:** 20, **72:** 33 (herring)
CFI 16 (tomato sauce for fish canning)
SS 1412 (thermophilic bacteria introduced by spices)

Spine (*see also* Vertebrae)
S 51 (skate spinal reflex)

Spines (*see also* Fin; Rays, fin)
PRP 73: 53 (dogfish age determination exhibit)
S 512 (dorsal spines variation in stickleback)

Spinyfin (*Diretmus argenteus*)
B 155: 230 (full description)

Spionidae (*see also* Polychaeta)
S 153, 732 (larval neotony in 2 species)

Spirinchus dilatus (*see* Smelt, longfin)

Spirinchus thaleichthys (*see* Smelt, Sacramento)

Spirontocaris (*see* Shrimps (Atlantic); Shrimps (Pacific))

Spisula solidissima (*see* Clam, bar)

Splake (hybrid of speckled (brook) trout with lake trout) (wendigo)
J 15: 612 (preferred temperature)
J 17: 541 (life history; review of development)
S 481: 107 (Man. culture & stocking)

Spleen (*see also* Morphology)
J 16: 421 (Pac. salmon: nucleic acids); **17:** 347 (sockeye salmon: histidine); **20:** 679 (tissue explant culture)
S 35 (shark); **607** (phosphorylribose enzyme in lingcod)

Splitting of fish (*see* Gutting)

Spoilage (*see* Quality of products: freshness and/or spoilage)

Sponges
C 1902–05: 35 (N.B. & N.S.); **1917–18: 229** (checklist & index of Canadian)
PRA 68: 3, **69:** 7 (oyster attack by *Cliona*, & control)
S 5 (N.B. *Gellius*); **513** (E Canada *Cliona*); **515** (fused *Cliona* larvae reproduction); **538** (*Cliona* boring procedure); **623** (Canadian Arctic)

Spongomorpha (*see* Sea-moss)

Sporendonema (*see* "Dun"; Moulds)

Sporozoa
SS 280 (parasitic in *Chiridota*)

Sport fishing (*see* Angling; Trout; Trouts; Salmon; *also* names of other sport fishes)

Spot, silver (*see* Sculpin, silverspotted)

Sprague, John Booty
J 20: 387 (freshwater crustaceans temperature & anoxia resistance); **21:** 17 (pollutants toxic to Atl. salmon)
CSG 38, 42 (NW Miramichi R. chemical conditions)
S 881 (Atl. salmon avoidance of pollution)
SS 1246 (DDT effects on young Atl. salmon)

Sprays (*see also* Insecticides)
B 49: 2 (bactericidal for halibut vessel holds)

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PRP 6: 3, **59**: 7, **62**: 12 (bactericidal & fungicidal for vessel holds, etc.)
SS 445 (formalin for vessel holds)

Spring salmon (*see* Salmon, chinook)

Sproat Lake and River, B.C.
J 11: 310 (salmon migration)
SS 415, 442 (ecology)

Sprules, William Memberry
J 9: 1 (Hudson Bay arctic char); **17**: 245 (goldeye eggs & development)
SS 836 (goldeye management program); **837** (Man. goldeye); **838** (mooneye & quillback sucker records); **896** (jigger for setting gillnets under ice); **1031** (Atl. salmon research & management)

Squalene
B 59, 89 (in liver oils; *see* their indexes)
PRP 53: 7, **56**: 11, **63**: 32, **65**: 67 (in dogfish liver oil)

Squalus acanthias (*see* Dogfish, spiny)

Squalus suckleyi (*see* Dogfish, Pacific)

Squanga Lake, Yukon
J 20: 749 (sympatric whitefish species)

Square Lake, Alta.
B 95: 28 (pike control)

Squareflipper (*see* Seal, bearded)

Squaretail (*Tetragonurus cuvieri*)
J 16: 384 (first B.C. record)
B 68R: 236 (full description)

Squawfish, northern (*Ptychocheilus oregonense*) (Columbia squawfish)
J 5: 295, 315, **8**: 103 (predator on young salmon); **10**: 196 (upper temperature limit); **11**: 694 (parasites); **12**: 499 (Skeena R. drainage lakes), 921 (exercise effect on blood); **13**: 768, **14**: 656 (B.C. distribution)
B 55: 34 (feed; merganser predation on); **56**: 35 (Okanagan L.)
PRP 18: 3, **32**: 21, **36**: 5 (predation on young salmon); **19**: 3 (feed of); **66**: 12, **68**: 55, **74**: 6, **78**: 6 (predation on young salmon in Skeena R. drainage lakes)
S 144: 68 (B.C. distribution)
SS 1208: 107 (full description)

Squeteague (*see* Weakfish)

Squidhound (*see* Dolphin, white-beaked)

Squids
C 1906–10: 32 (as Atl. cod bait); **1917–18**: 248 (Canadian)
J 14: 83 (*Illex* as whale feed; corrections on **16**: 929); **14**: 693 (Nfld. *Illex* life history); **20**: 853 (*Tetronychoteuthis dussumieri* record, NW Atl.)
B 109, 141 (*Illex* as cod longlining bait)
PRA 58: 17 (*Illex* for groundfish bait); **71**: 21 (*Illex* resource & future prospects); **72**: 23 (Nfld. inshore & offshore *Illex* catches)
PRP 42: 3 (*Loligo opalescens* as chinook salmon feed); **52**: 9, **79**: 30, **95**: 35, **109**: 9, **112**: 7 (as marine feed); **71**: 5 (taurine in); **83**: 27 (*Gonatus* & *Moroteuthis* as whale feed); **107**: 11 (observed in NE Pac.)
CNG 64: 26 (*Illex illecebrosus* productive capacity)
CNS 1–11 inclusive, **13** (*Illex* trawl catches in B.C. by areas, 1945–63)
S 104 (effect of ultraviolet irradiation); **245** (B.C. edible *Loligo opalescens*); **587** (N.S. *Loligo*); **851**: 62 (*Loligo, Gonatus* & *Moroteuthis* re B.C. fishery)
SS 238 (re "sea serpent" sightings); **295** (pursue Atl. herring); **509** (*Loligo* behaviour); **1143** (as pilot whale feed)

Squires, Hubert Jacob
J 12: 781 (Ungava murre feeding habits); **13**: 467 (haddock otolith data re growth rate); **14**: 693 (Nfld. squid), 831 (Nfld. fish fillet nematodes); **17**: 9 (*Sphyrion* parasitic copepods on redfish); **19**: 677 (Frobisher Bay decapods), 891 (Nfld. blue ling record); **20**: 273 (W Atl. black scabbardfish); **21**: 355 (hermit crab description), 461 (*Argis lar* neotype)
B 129 (Nfld. shrimp survey); **135** (Nfld. giant scallops)
PRA 67: 31 (Gulf of St. Lawrence fish larvae); **72**: 23 (squid off Nfld.)
S 372 (Nfld. marine turtles); **482** (Ungava Bay decapod Crustacea)
SS 1093 (Nfld. fishery research)

St. Andrews, N.B. (*see also* Passamaquoddy Bay *and* the note to that heading; *also* St. Croix River, N.B.; Station, Board Biological, St. Andrews, N.B.)

PRA 42: 4, **51**: 17, **53**: 5, **58**: 6, **71**: 8 (surface seawater temperatures)

SS 456 (sea vs. air temperature); **544** (sky halo)

St. Anthony, Nfld.

PRA 68: 9 (commercial longlining experiment)

St. Croix River, N.B. (*see also* St. Andrews, N.B.)

C 1906–10: 265 (flora); **1914–15**: 151 (estuary oceanography); **1915–16**: 109 (geology)

PRA 32: 3 (smallmouth black bass)

St. James, Cape, (lightstation), B.C.

PRP 26: 5, **31**: 16, **90**: 16, **91**: 3, **92**: 6, **98**: 6 (oceanographic data)

St. John River and estuary, N.B.

J 4: 424 (oceanography); **17**: 377 (estuarial biological oceanography)

B 51 (return of salmon)

PRA 6: 7 (earliest salmon run); **32**: 3 (smallmouth black bass)

St. Lawrence, Gulf of (*see also* Belle Isle, Strait of; Canso, Strait of; Laurentian Channel; Northumberland Strait; Oceanography, Atlantic (NW coastal waters); *also* International Commission for the Northwest Atlantic Fisheries; *also* names of Provinces having shoreline on)

C 1914–15: 81 (herring disease); **1918–20**: 109 (fish from Cape Breton & Magdalen Is.)

J 1: 269, **2**: 41 (lobster & lobster tagging); **11**: 239 (plankton), 245 (fishes); **14**: 729 (feeding of gulls & terns), 899 (redfish); **15**: 1189, **20**: 451 (scallop mortality); **15**: 1269 (halibut stocks), 1383 (cod reproduction & feed); **16**: 213 (cod nematode infestation); **20**: 435 (epizootic effects on herring stocks), 497 (discards of fish at sea), 855 (haddock migration); **21**: 57 (cod growth)

B 13: 4 (arctic ice); **43** (lobster); **61**: 12 (cod); **111** (herring investigation; correction on **J 16**: 386); **134**: 58 (re Atl. oceanography)

PRA 22: 9 (lobster sizes); **28**: 14 (cod tagging); **50**: 3 (halibut movements); **67**: 31 (cod & herring fall spawning); **69**: 33 (dragger fishery mesh regulations)

CSG 39 (Seven Is. cod source)

S 184 (butterfish); **284** (sea sunfish); **437** (silver hake); **836** (November marine birds); **853** (cod mortality rate)

SS 154 (fisheries research); **177–186** inclusive (1914–15 Canadian Fisheries Expedition reports); **1242** (cod)

St. Patrick Lake, N.B.

PRA 36: 6 (trout angling yields)

St. Pierre Bank (off Nfld.)

J 13: 467 (haddock growth rates)

PRA 70: 31 (scallop fishery)

Stability of waters (*see also* Oceanography)

J 18: 961 (in B.C. mainland inlets)

Staff and volunteer investigators at Board stations (*see also* History; *also* the Annual Reports of the Board; a fairly complete record of such personnel and their work during the period 1898–1924 is given in Board MS Report (biological series) No. 660)

J 15: 782 (Biological Station, Departure Bay, B.C.), 1155 (Biological Station, St. Andrews, N.B.)

Stafford, Joseph

C 1901: 19 (Passamaquoddy Bay clam fishery); **1902–05**: 31 (Canadian Maritimes fauna: general, also Porifera & Echinodermata), 91 (marine parasitic trematodes); **1906–10**: 37 (Malpeque Bay, P.E.I., invertebrate fauna, particularly Mollusca), 45 (Gaspé marine fauna & birds), 69 (Canadian Atl. hydroids, Polyzoa, brachiopods, molluscs), 221 (recognition of bivalve larvae in plankton)

SS 12, 22 (trematodes); **19, 21, 32, 40, 57, 79** (larvae, spat & development of Atl. oyster); **56** (Atl. oyster conservation); **99** (B.C. native oyster)

Stagnation of marine waters

J 18: 975 (in some B.C. mainland inlets); **19**: 1 (Saanich Inlet, B.C.)

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PRP 12: 7, **96**: 3, **99**: 9 (in various B.C. inlets)
S 123 (in 3 B.C. inlets)

Staining
PRA 45: 14, **60**: 3 (of salt fish through use of impure salt)
S 706 (technique for staining of helminths for microscopy)

Stamp River and Falls, B.C.
PRP 90: 21, **95**: 53, **98**: 10 (reactions of migrating salmon to various stimuli)

Standing crop (*see* Crop, standing)

Staphylococcus
J 6: 74 (inhibition by nitrites)
PRA 44: 3 (food poisoning & prevention)
PRP 61: 13 (skin infection in humans); **106**: 8 (food poisoning & prevention)
S 438 (suppression by CTC antibiotic)

Starfish, brittlestar (*Ophiura*) (serpent star)
C 1917–18: 236 (Canadian); **1**: 21 (Hudson & James Bays)
J 3: 350 (Hudson Bay); **12**: 899 (E arctic)
CNG 35 (re B.C. shrimp prospecting)
SS 399 (*Anthophiura*)

Starfishes
C 1917–18: 235 (Canadian); **1**: 21 (Hudson & James Bays), 455 (summer migration, Departure Bay, B.C.)
J 2: 97 (temperature tolerance); **3**: 350 (Hudson Bay); **5**: 84 (distribution & size factors, Atl.); **7**: 96 (thiaminase in *Asterias*); **11**: 601 (*Asterias* stock & recruitment); **12**: 899 (E arctic)
B 22: 14, **48**: 1, **60**: 44, **131**: 73 (*Asterias* life history; predator on Atl. oysters); **30**: 17 (*Pycnopodia* as crab predator); **34**: 22 (as Pac. oyster predator)
PRA 17: 7 (temperature re distribution); **27**: 13 (quicklime as deterrent on oyster beds); **28**: 3 (growth), 4 (marking for movement rate), 5 (mopping from oyster beds)
PRP 50: 21 (*Pisaster* and *Pycnopodia* as clam predators)
COF 6 (abundance, size & age on Atl. oyster beds); **7**, **11** (control as oyster predator)
S 13 (pentoses in *Evasteris* tissues); **149** (gonad protozoan parasite); **517**, **546** (sterols); **619** (*Pisaster* sterol biosynthesis)
SS 104 (shallow-water, of Pac.); **162** (*Asterias* & *Solaster* egg cytology); **163** *Asterias* × *Solaster* hybrid); **189** (tissue pentose); **225** (use as fertilizer); **348** (Departure Bay, B.C.)

Starsnout, bigeye (*Asterotheca pentacantha*)
B 68R: 331 (full description)

Starsnout, gray (*Asterotheca alascana*)
B 68: 290, **68R**: 329 (full description)
S 290 (Queen Charlotte Is.)

Starsnout, spinycheek (*Asterotheca infraspinata*)
B 68: 291, **68R**: 330 (full description)
S 290 (B.C. records)

Station, Board Arctic Biological, Ste. Anne de Bellevue, Que. (formerly at Montreal, Que.) (*see also* the Annual Reports of the Board)
SS 1199 (1958 activities)

Station, Board Biological, Departure Bay, B.C. (*see also* Cultus Lake; History; *also* the Annual Reports of the Board)
J 15: 759 (history; 50th anniversary); 779 (history)
PRP 1: 5 (purposes), 9 (Cultus L. substation); **17**: 3 (25th anniversary); **68**: 50 (fish tagging & marking exhibit); **73**: 53 (fish age determination exhibit); **82**: 19 (new building); **102**: 13 (exhibit at Vancouver aquarium); **112**: 20 (50th anniversary)
SS 29 (need for establishment of); **88**: **89, 213, 327, 398, 702, 744, 850** (work of); **901** (new building); **1219** (50th anniversary); **1314** ("open house")
[Board MS Report (biological series) No. **660**: 97, 228 gives history to 1924 & publications lists]

Station, Board Biological, Floating Marine (Atlantic coast) (*see also* History)
C 1901: 1, **1906–10**: 1 (history)
J 15: 1128 (establishment; photo of)
SS 1, 2, 4, 5, 6, 8, 9, 11, 13, 14, 27, 28, 33 (history & work)
[Board MS Report (biological series)

No. **660**: 26 gives history to conclusion of its use in 1909]

Station, Board Biological, Georgian Bay, Ont. (*see also* History)
SS 13, 28, 41, 271 (operation & work)
[Board MS Report (biological series) No. **660**: 56, 221 gives history during 1902–17 & publications list]

Station, Board Biological, St. Andrews, N.B. (*see also* Ellerslie, P.E.I.; History; *also* the Annual Reports of the Board)
C 1901: 1 (foundation, aims & work); **1906–10**: 1 (1908 report)
J 15: 1127 (history; 50th anniversary)
PRA 1: 3, 15 (history; description)
SS 23 (choosing locality); **45, 232, 753** (investigations); **1165** ("open house"); **1214, 1219** (50th anniversary)
[Board MS Report (biological series) No. **660**: 79, 136 gives history to 1924 & publications lists]

Station, Board Biological, St. John's, Nfld. (*see also* the Annual Reports of the Board from 1948)
SS 804 (Nfld. fisheries research); **1264** ("open house")

Station, Board Biological, Winnipeg, Man. (Established at Winnipeg in 1944, moved to London, Ont., in 1957, re-established at Winnipeg in 1966 as the Freshwater Institute. *See* Annual Reports of the Board from 1944)

Station, Board Technological, Grande-Rivière, Que. (*see also* the Annual Reports of the Board from 1936)
MSP 7 (25th anniversary)
SS 1146 (research forum); **1273** (25th anniversary)

Station, Board Technological, Halifax, N.S. (*see also* History; *also* the Annual Reports of the Board)
PRP 1: 3 (establishment)
SS 283, 633, 674, 869, 1186, 1374, 1383 (work of)

Station, Board Technological, Vancouver, B.C. (Established at Prince Rupert, B.C., in 1926, moved to Vancouver in 1942. *See also* History; *also* the Annual Reports of the Board)
J 15: 781 (establishment at Prince Rupert)
PRP 1: 6, **21**: 3 (purposes); **67**: 35 (smoke tunnel exhibit); **82**: 8 (shrimp sorter exhibit); **89**: 77 (25th anniversary); **93**: 25 (refrigerated cabinet exhibit); **103**: 7 ("open house"); **119**: 19 (new building, Vancouver)
MSP 6 (25th anniversary)
SS 321, 368, 570, 606, 632, 702, 872, 1095 (work of); **753** (war effort researches); **1203** (opening at Vancouver)

Station lists (during biological and hydrographical expeditions) (*see* "Calanus" series; Hudson Bay)

Statistical methods (The following listing is not exhaustive; *see also* Mathematical treatment of data; Sampling; *also* other cognate subjects)
J 15: 717, 747 (fish quality grading); **16**: 339 (herring gillnet mesh selection)
B 119 (re fish populations)
CNG 68 (forms for sightings of whales, etc.)
S 128 (pilchards); **158** (plankton sampling); **167** (fiducial limits: Poisson distribution); **303** (uses in scientific research)
SS 731 (covariance, re trout head lengths vs. environment); **780** (yields, re fishing mortality & effort); **802** (size limits re maximum yields); **803** (applications to fishery problems); **810, 819** (biological productivity formulation); **860** (for fish populations); **915** (stratified subsampling for age); **918** (sequential analysis re whitefish sampling)

Statistics of fisheries and catches (The following listing is not exhaustive; *see also* Catches; Landings; Statistical methods; Yield; *also* names of International Commissions; names of organisms constituting commercial fisheries; names of bodies of water; *and* other cognate subjects)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

C 2: 161 (shad); **3**: 307 (lobster; alewife), 423 (haddock); **5**: 453, **6**: 169 (whitefish)

J 2: 129, **10**: 1, **17**: 133 (Atl. herring; correction on **17**: 944); **5**: 43, **8**: 281 (theory); **8**: 184, **15**: 1007 (sockeye salmon); **8**: 264 (Great Slave L. fishes); **9**: 450 (pink & chum salmon); **11**: 5, **17**: 677, **18**: 123 (lake trout); **11**: 284, **17**: 625 (whitefish); **15**: 625 (selection), 831 (lingcod; correction on **16**: 386); **15**: 1213 (Minas Basin Atl. salmon), 1269 (Atl. halibut); **16**: 107, 131 (Lake Winnipeg); **17**: 41 (haddock), 169 (groundfish off S N.B.), 245 (goldeye, W Canada), 553 (lobsters, Quoddy region); **18**: 1153 (pond trout)

B 2: 25 (lumpfish); **3**: 8 (angler); **18**: 6, **61**: 4 (Atl. cod); **21**: 7 (Atl. salmon); **22**: 11 (P.E.I. oysters); **23**: 6 (Ont. markets); **33**: 27, **43**: 5 (lobster); **36**: 6, **38** (pilchard); **54**: 6 (lingcod); **62**: 24, **91**: 12 (Dungeness crab); **67** (B.C. herring); **69**: 10 (haddock); **72**: 11 (Atl. halibut); **90**: 7 (pink & chum salmon); **119** (fish population computations); **139** (Strait of Georgia trawl fishery review)

PRA 2: 9 (Atl. oyster); **3**: 10 (softshell clam); **4**: 10, **24**: 12 (haddock); **25**: 12 (Atl. flatfish); **34**: 5 (Atl. smelt); **49**: 14, **54**: 12, **70**: 31 (Atl. scallop); **62**: 4, **70**: 3 (Atl. cod); **70**: 16 (Atl. salmon)

PRP 36: 5 (reason for collecting B.C. herring); **39**: 9, **42**: 18, **54**: 6 (Pac. salmon angling); **46**: 20 (steelhead trout); **49**: 18, **56**: 6 (eulachon); **62**: 24 (B.C. otter trawl fishery); **75**: 31 (sockeye salmon); **77**: 91 (soupfin shark); **84**: 67 (lingcod trawling); **91**: 28 (coho salmon); **98**: 17 (brill); **101**: 12, **103**: 5 (salmon trolling); **102**: 10 (Pac. cod trawling); **104**: 38 (cutthroat trout)

CJG 1–7 inclusive (Nfld. groundfish landings, 1953–59)

CNG 64 (Canadian fisheries productivity); **68** (forms for whale sightings)

CNS 1–11 inclusive, **13** (B.C. trawl groundfish landings by areas, 1945–63); **12** (trawl fishery total catch & effort, W coast Canada & U.S.A., 1959–61)

CSS 1–6 inclusive (offshore groundfish landings in N.S., 1947–52); **7, 8, 9** (Maritimes landings of groundfish, 1953–55)

NRB 1: 11 (Atl. salmon, Nfld.); **11**: 12 (lobster, Nfld.)

NRS 2: 11 (lobster, Nfld.)

S 128 (pilchard); **188** (Atl. salmon); **230** (rainbow trout); **238, 286** (B.C. clams); **240, 285, 363, 423, 464, 500** (B.C. herring); **258** (Canadian fisheries); **288, 381** (Pac. salmons); **292** (North Sea after 1914–18); **293, 294, 296** (need for); **302** (California pompano in B.C.); **318, 321** (P.E.I. speckled trout); **319** (nylon vs. cotton nets in Lake Winnipeg); **339** (pink salmon); **341** (trout, Crecy L., N.B.); **354** (Atl. fisheries); **389** (Pac. groundfishes); **392** (Pac. dogfish); **393** (B.C. whaling); **394** (sablefish fishery); **650** (Pac. Ocean marine resource production; values; imports; exports)

SS 759 (Canadian Great Lakes fishery, 1867–1939); **779** (B.C. commercial shellfish); **860** (estimation method for vital); **885, 909** (B.C. commercial catches)

Staurophorus mertensii (*see* Jellyfish)

Stearine; Cold-clearing of oils

C 8: 321 (re paint from fish oils)

J 1: 487, **2**: 13 (re paint from fish oils)

B 37, 59, 89 (of marine animal oils; *see* their indexes)

PRP 4: 6, **10**: 17, **24**: 3 (re paint from fish oils); **25**: 13 (pilchard oil; uses); **32**: 17, **36**: 16, **63**: 43 (effect on measuring bulk volumes of oils); **38**: 7 (herring oil; vitamin potency); **44**: 4 (cold clearing); **55**: 16 (cold test for)

Steele, Donald Harold

J 14: 899 (Gulf of St. Lawrence redfish); **20**: 1267 (Bay of Fundy pollock)

Steelhead trout or salmon (*see* Trout, steelhead)

Steiner, George

PRP 104: 7 (storing salmon in refrigerated seawater with & without antibiotic)

S 440 (heat destruction of antibiotic in fish flesh)

Stenella graffmani (*see* Dolphin, spotted)

Stenella styx (*see* Dolphin, long-snouted)

Stenodus

J 14: 599 (origin, distribution)

Stenodus leucichthys (*see* Inconnu)

Stenodus leucichthys mackenziei (*see* Inconnu)

Stenodus chrysops, S. versicolor (*see* Scup)

Stephens, Kenneth Valentine Cory
J 18: 1001 (marine phytoplankters chemical composition); **21:** 139 (phytoplankters cell division rate)
CPO 1960-2 (conductivity salinometers); **1961-19** (phytoplankton biology in plastic sphere)
S 682, 816 (plankton production in plastic sphere); **777** (plastic water samplers improved tripping mechanism); **778** (thermopile radiometer for measuring underwater photosynthetic radiation); **815** (low PO_4 concentration determination in waters)

Stephens Lake, B.C. (*see* Skeena River drainage system lakes)

Sterids
J 14: 57 (in soils, seston, freshwater & marine sediments, natural waters)

Sterilization (*see also* Antibiotics; Canning; Disinfectants; Formaldehyde; Preservatives; Sanitation; Sprays, etc.)
J 7: 55 (sea water)
PRP 38: 3, **39:** 16 (by ultraviolet light)
SS 808 (sea water)

Stern, Joseph Aaron
J 10: 590 (redfish pyloric caeca enzyme activity)
PRA 4: 8 (Fundy scallop resource); **11:** 10 (scallop growth)

Sternoptyx diaphana (*see* Hatchetfish, transparent)

Steroids (*see* Hormones)

Sterols (*see also* Cholesterol; Lipids) (Numbered items are a series of 10 studies on marine sterols)
J 17: 597 (No. 7: synthesis of marine); **18:** 143 (in frozen Atl. cod muscle); **21:** 1035 (seasonal variations in scallop muscle), 1519 (metabolism in Atl. oyster), 1543 (of scallop)
B 59, 89 (in marine animal oils; *see* their indexes)
PRP 71: 5 (in marine fish & invertebrates); **101:** 26 (new, in Pac. oysters); **112:** 6 (homing sockeye salmon steroid hormones)
S 406, 433 (Nos. 1, 2: new, from marine shellfishes); **470** (No. 3: cholesterol derivatives synthesis); **475** (ostreasterol & chalinasterol); **498** (No. 4: from barnacle, & synthesis); **517** (review of marine invertebrate); **546** (No. 5: isolation from starfish); **619, 659** (Nos. 6, 9: biosynthesis in mussel, clam & starfish); **624** (hypocholesterolemic factor in butter clam); **637** (No. 8: transformations in clam); **703** (No. 10: of *Euphausia pacifica* plankton); **879** (22-dehydrocholesterol isolation from scallop)

Stevenson, James Cameron
J 19: 735 (B.C. herring larvae distribution & survival); **21**(5): i (Editor's Foreword)
PRP 67: 32 (B.C. herring growth); **73:** 64 (larval herring survey); **80:** 57 (extent of B.C. herring spawning); **84:** 58 (eelgrass destruction by frost); **93:** 13 (B.C. herring spawning re population abundance)
CNG 3 (recovery of herring scales); **6, 7, 8, 15, 19, 21, 24, 25, 29** (B.C. herring prospects); **9** (B.C. herring catch & spawning); **16** (B.C. herring scouting, 1949); **18** (B.C. herring mortality); **27** (absence of 1952–53 B.C. herring fishery re research)
S 446 (B.C. herring tagging & movements); **453** (B.C. fisheries resources abundance, distribution & exploitation)
SS 781 (upper Great Lakes smelt situation); **865, 897, 923, 948** (W coast Vancouver Is. herring); **1005** (effect of year's closure on B.C. herring fishing); **1049** (aerial scouting for B.C. herring); **1200** (B.C. commercial fisheries); **1356** (new research barge)

Stevenson, John Alexander
J 11: 660 (scallop growth rate, Digby, N.S.)
SS 509 (long-finned squid behaviour)
J 3: 188 (obituary of)

Stevenson, William Rodney
J 18: 259 (Atl. salmon eye measurements)

Steveston Harbour Basin, B.C. (*see* Fraser River and estuary)

Stew
PRP 81: 83 (canned oyster)

Stewart, Beatrice J.
C 8: 103 (B.C. fish furunculosis)

Stewart, James Edward
J 17: 595 (suppression of bacterially produced trimethylamine); **20**: 729 (bacteria amino acid content, re productivity), 1081 (aquarium for marine animal experiments), 1103 (illumination in biological experiments); **21**: 1549 (lobster tolerance to fluoride & wood extracts)
CHN 9 (Gaffkaemia lobster disease); **13** (continuous-flow seawater aquarium); **17** (lobster tolerance for fluoridated water & tank woods)

Stewart, Kathryn Dwyer
SS 1345 (new freshwater fish products); **1374** (fisheries food technology)

Stewart, Kenneth William
J 19: 1161 (morphology & optics of fish adipose eyelid)

Stewart, Thomas Newton
B 108 (Danish-seine explorations, Nfld.)

Stichaeus punctatus (*see* Shanny, arctic)

Stickleback, blackspotted (*Gasterosteus wheatlandi*) (*G. bispinosus*; twospine stickleback)
C 1902–05: 83, **1918–20**: 110 (N.S.)
J 16: 823 (Miramichi estuary, N.B.)
B 155: 182 (full description)
SS 246 (*G. bispinosus johanseni*)

Stickleback, bloody (*see* Stickleback, fourspine)

Stickleback, brook (*Eucalia inconstans*)
C 1911–14(II): 36 (Lake Huron); **1921**: 149, **8**: 23 (Hudson Bay)
J 11: 700 (parasites, B.C.); **13**: 773, **14**: 657 (B.C. distribution); **15**: 214 (Heming L., Man.); **16**: 147 (associations in Ont. streams), 823 (Miramichi R., N.B.); **21**: 587 (downstream movement)
S 144: 70 (Peace River region); **357** (Lake Winnipeg region); **481** (Man.); **512** (dorsal spine number variation)
SS 1208: 140 (full description, B.C.)

Stickleback, fourspine (*Apeltes quadracus*) (bloody stickleback; pinfish)
C 1902–05: 84, **1918–20**: 111 (N.S.)
J 16: 823 (Miramichi estuary, N.B.)
B 155: 179 (full description)
S 234 (P.E.I.)
SS 246 (regional variation)

Stickleback, ninespine (*Pungitius pungitius*)
C 1902–05: 83, **1918–20**: 110 (N.S.); **1921**: 152, **8**: 23 (Hudson Bay); **1**: 437 (Lake Athabaska)
J 9: 111 (Ungava Bay); **15**: 214 (Heming L., Man.); **16**: 823 (Miramichi R., N.B.); **21**: 27 (geographic variations)
B 72: 37, 42 (N.W.T.); **94**: 22 (distribution in Canadian Arctic, etc.); **155**: 184 (full description)
PRA 20: 6 (population in N.S. lakes)
S 137, 213: 422 (Lake Jesse, N.S.); **206** (of 3 N.S. lakes); **234** (P.E.I.); **357** (Lake Winnipeg region); **481** (Man.)
SS 1092 (Nfld.)

Stickleback, threespine (*Gasterosteus aculeatus*) (pinfish; twospine stickleback, spantickle)
C 1902–05: 91 (trematode parasite); **8**: 22 (Hudson Bay)
J 9: 111 (Ungava Bay); **11**: 700 (parasites, B.C.); **12**: 499 (Skeena R. basin lakes); **14**: 655 (B.C. distribution); **15**: 909 (school characteristics); **16**: 147 (associations in Ont. streams), 823 (Miramichi estuary, N.B.); **21**: 873 (host of *Caligua clemensi*)
B 55: 36 (feed in B.C. lakes); **68**: 124, **68R**: 353 (full description, Pac.); **94** (distribution in Canadian Arctic, etc.); **155**: 181 (full description, Atl.)
PRP 65: 70 (sudden mortality in Quamichan L., B.C.); **66**: 12, **68**: 55 (re salmon in Skeena R. system lakes); **109**: 3 (sudden mortality in Alberni Harbour, B.C.)
S 144: 70 (B.C. lakes, as common stickleback); **234** (Malpeque Bay, P.E.I.)
SS 247 (new sub species ?); **688** (estuary entrance method); **1208**: 138 (full description, B.C. freshwater)

Stickleback, twospine (*see* Stickleback, blackspotted; Stickleback, threespine)

Sticks, fish
J 13: 791 (fat determination in)
S 728 112 (avoiding unwanted moisture during preparation of flesh)
SS 1237 (freezing "wet" fish blocks for)

Stickwater (press liquor) (*see also* Meals; Reduction of fish or offal; Solubles, condensed)
C 7: 165 (glue from)
J 3: 177 (nitrogen content); **7**: 513, 563 (amino acids); **16**: 689 (preservatives for)
B 35 (losses in effluent); **39** (effluent causing pollution); **59**: 246 (composition of herring & pilchard); **89**: 206, 209 (re meal production)
PRP 16: 14 (seawater pollution by pilchard); **20**: 14 (nitrogen losses in pilchard); **69**: 66 (nitrogen distribution in sablefish & dogfish liver); **73**: 50, **77**: 97 (amino-acid composition of various); **85**: 83 (herring: vitamin B_{12} for poultry feed); **93**: 20, **96**: 16 (herring: re ruminant cellulose digestion); **101**: 6, 10, **105**: 27 (herring: preservation & conversion to condensed solubles); **101**: 27 (herring & whale: vitamin B_{12} in condensed & dried solubles form); **103**: 18 (herring: vitamin B_{12}); **111**: 23 (herring: chick nutritive value of solubles from acid vs. enzyme treatment of)
CVI 11 (herring & salmon: essential amino acids)
S 310 (salmon: vitamin B_{12}); **325** (microbiological vitamin B_{12} enrichment); **332** (utilization); **377** (stimulant for ruminant digestion); **407, 408** (high-temperature bacterial decomposition & prevention); **601** (herring stickwater viscosity & lessening)

Sting of marine organisms
PRP 55: 7 (jellyfishes: poisonous to man)

Stingray, diamond (*Dasyatis dipterurus*) (rat-tailed sting ray)
B 68: 68, **68R**: 91 (full description)
PRP 25: 9 (description)

Stingray, roughtail (*Dasyatis centroura*)
B 155: 64 (full description)
AF 12e: 37 (description)

Stizostedion canadense (*see* Sauger)

Stizostedion vitreum glaucum (*see* Pike, blue)

Stizostedion vitreum vitreum (*see* Walleye

Stock, V.
C 1911–14(I): 69 (parasitic copepods of Bay of Fundy fishes)

Stock: maintenance, recruitment, standing, usable (*see also* Abundance; Census; Population studies and dynamics; Surveys; Yield; *also* names of International Commissions; names of organisms contributing to commercial fisheries)
J 12: 543 (environmental factors re standing stock of fishes in lakes); **15**: 991 (effect of mixing of stocks on yield)
B 119 (stock re recruitment, etc.; *see* its index); **143** (status of B.C. herring)
S 423, 464, 500 (B.C. herring); **484** (re various factors); **508, 509** (Atl. salmon, re hatcheries); **610** (definition of NW Atl. haddock); **654, 655, 656, 657, 658, 769, 859** (N Pac. salmons); **791** (NW Atl. cod stock divisions); **812** (stock condition diagnosis methods); **862** (Fraser R. pink salmon); **873** (re recruitment in B.C. herring populations)
SS 747, 748, 749, 943 (wise use of); **909** (B.C. fisheries); **1044** (B.C. whales)

Stock-taking (*see* Abundance; Census; Population studies and dynamics; Stock; Surveys; *also* names of International Commissions; names of organisms)

Stocking (*see also* Hatcheries)
J 12: 210 (hatchery-reared trout in N.B. lakes)
PRA 36: 6 (trout in Charlotte County lakes, N.B.)
SS 664, 809, 861 (brook trout)

Stokes, John Whitley
B 101 (rockslide effects on Babine R. salmon)
SS 965 (Moricetown Falls biological survey)

Stolon
SS 74 (function in polychaete)

Stomach contents (*see also* Feed studies; Predation; Predators; *also* names of organisms)
J 21: 103 (lack of lampreys, in Pac. fishes)
CJG 2 (ejection by stomach eversion in fish during catching)

Stomias boa ferox (*see* Dragonfish, boa)

Stonecat (*Noturus flavus*)
J 16: 147 (associations in Ont. streams)

Stoneflies (*see also* insects)
C 4: 157 (Jasper Park lakes Plecoptera)
J 11: 543 (new, from NW America)
S 208 (Cultus L., B.C.); **843** (distribution & description of *Isocapnia* species); **872** (new *Allocapnia* species); **1090** (N.W.T.)
SS 565, 566 (3 new species); **662** (new, from Baffin Is.); **663** (descriptions); **766** (southwest B.C.); **973, 1046** (systematic studies); **1229, 1303, 1340** (general)

Stoner, D.
SS 207 (Vancouver Is. Scutelleroidea)

Stoneroller (*Campostoma anomalum*)
S 481 (non-verified occurrence in Man.)

Storage of frozen fishery products (*see* Refrigeration)

Storms (*see also* Oceanography; Weather; Wind)
C 1918–20: 29 (effect of severe on marine organisms)
J 1: 227 (effect on N.S. coastal waters); **8**: 332 (effect on Magdalen Shallows water conditions); **12**: 4 (effect on B.C. offshore waters)
B 57: 29 (re Atl. salmon angling success)
PRA 11: 6 (cyclone effect on hydrography); **23**: 13 (hurricane foretold by *Salpa* behaviour)
S 358 (effect on Sambro Lightship vicinity, N.S.)
SS 1074 (surges & adjustment in water masses); **1099** (storm experience of oceanographic vessel in NE Pac.)

Stowage in vessel holds (*see* Chilling; Disinfection; Freezing; Holds; Ice; Icing; Odours; Refrigeration; Sea water, refrigerated)

Strait of . . . . (*see* name of strait)

Stratification of waters (*see* Currents; Limnology; Oceanography)

Strength, tensile (of fish muscle)
C 3: 467 (of Atl. fishes, re smoking procedures)
S 31 (of haddock, re smoking)

Streptococcus
PRP 61: 13 (skin infection in human)

Streptomyces (*see also* Moulds)
PRP 85: 83 (producing vitamin B_{12} in stickwater)

Stress (*see* Activity)

Strickland, John Douglas Hipwell
J 15: 453 (ocean solar radiation re photosynthesis); **17**: 337 (phosphorus cycle in NE Pac.); **18**: 1001 (marine phytoplankters chemical composition); **21**: 139 (phytoplankters cell division rates), 159 (phytoplankton photosynthesis)
B 122 (marine phytoplankton productivity); **125** (seawater analysis manual; revised edition in 1965)
PRP 113: 13 (primary productivity & fertility of NE Pac. & B.C. coastal waters)
CPO 1959-20 (productivity of waters at NE Pac. ocean weather station); **1960-20, 1961-19** (phytoplankton biology in plastic sphere); **1961-21** (ocean primary productivity cruise)
S 576 (NH_3, NO_3, Fe & P determination in seawater); **583** (data accuracy & precision assessment); **609** (marine standing crops proximate analysis); **612** (NE Pac. Canadian oceanography); **631** (NE Pac. waters primary productivity & fertility); **644, 682, 816** (marine photosynthesis in submerged plastic bag); **673** (light attenuators for marine photosynthesis studies); **753** (particulate organic carbon production in seawater); **758** (organic detritus); **778**

(thermopile radiometer for measuring underwater photosynthetic radiation)
SS 1375 (phytoplankton re primary production)

Striper (*see* Bass, striped)

Stripping (for eggs and sperm) (*see* Hatcheries)

Strongylocentrotus dröbachiensis (*see* Sea-urchins)

Struggling, effect of (*see* Activity)

Struvite crystals in canned products (*see* Crystals)

Stuart Channel, B.C. (*see also* Oceanography, Pacific (NE coastal waters))
J 21: 1289 (kraft-mill effluent dispersion)

Sturgeon, American Atlantic (*Acipenser oxyrhynchus*) (*A. sturio*; sea sturgeon)
J 12: 646 (flesh albumin protein), 754 (Que. subspecies *A. o. oxyrhynchus* re Gulf of Mexico subspecies *A. o. de sotoi*); **16**: 812 (Miramichi R., N.B.); **18**: 893 (proximate composition)
B 155: 82 (full description)
S 587 (Minas Basin, N.S.)

Sturgeon, green (*Acipenser medirostris*)
J 14: 655 (B.C. freshwater distribution)
B 68: 74, **68R**: 99 (full description)
PRP 100: 19 (particulars of an usual catch)
CNG 64: 50 (productive capacity)
SS 1208: 32 (full description of B.C. freshwater)

Sturgeon, lake (*Acipenser fulvescens*) (*A. rubicundus*; rock sturgeon)
C 1911–14(II): 11 (Lake Huron); **8**: 42 (Hudson Bay)
J 14: 553 (spawning periodicity)
B 94: 6 (Canadian Subarctic)
PRC 2: 37 (canning of Lake Erie)
CCG 5: 1 (fillet proximate composition)
CNG 64: 70 (productive capacity)
S 481 (Man.)
SS 111, 117, 119 (Hudson & James Bays); **358** (Prairie Provinces fishery); **359** (Lake Winnipeg)

Sturgeon, rock (*see* Sturgeon, lake)

Sturgeon, sea (*see* Sturgeon, American Atlantic)

Sturgeon, shortnose (*Acipenser brevirostrum*)
J 16: 504 (N.B. record)
B 7: 18 (insulin in); **155**: 81 (full description)

Sturgeon, stellate (*Acipenser stellatus*)
B 119: 170 (Derzhavin population estimate)

Sturgeon, white (*Acipenser transmontanus*)
J 14: 655 (B.C. freshwater distribution)
B 68: 73, **68R**: 96 (full description); **94**: 6 (Canadian Subarctic)
CNG 64: 50 (productive capacity)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
SS 1208: 31 (full description of B.C. freshwater)

Sturgeons (in general)
J 16: 515 (seasonal "races" of Asiatic; correction on page 930)
SS 134 (unutilized resource)

Style, crystalline (of bivalves)
S 16 (re respiration)
SS 448, 449, 528 (oxidase in), **1206** (*Cristispira* in)

Subramanyan, Vaidyanatha Iyer
J 16: 1 (antibiotic for India fish quality preservation)

Sucker, bridgelip (*Catostomus columbianus*) (Columbia small-scaled sucker)
J 14: 654 (B.C. distribution)
SS 1208: 92 (full description, B.C.)

Sucker, coarsescale (*see* Sucker, largescale)

Sucker, Columbia small-scaled (*see* Sucker, bridgelip)

Sucker, fine-scaled (*see* Sucker, longnose)

Sucker, largescale (*Catostomus macrocheilus*) (coarsescale sucker; Columbia River sucker)

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J 3: 20 (feed of); **10**: 196 (upper lethal temperature); **11**: 688 (parasites, B.C.); **12**: 499 (in Skeena R. basin lakes); **13**: 765, **14**: 657 (B.C. distribution)
B 55: 33 (feed of; merganser prey); **56**: 32 (Okanagan L., B.C.)
PRP 66: 12, **67**: 23 (re salmon in Skeena R. lakes)
S 144: 67 (B.C. distribution)
SS 1208: 86 (full description, B.C.)

Sucker, longnose (*Catostomus catostomus*) (fine-scaled sucker; northern sucker; red sucker; sturgeon sucker)
C 1911–14(II): 16 (Lake Huron); **1**: 421 (N Canada); **8**: 21 (Hudson Bay)
J 8: 207 (Great Slave L.); **9**: 105 (Ungava Bay); **10**: 196 (upper lethal temperature); **11**: 687 (parasites, B.C.); **12**: 499 (Skeena R. drainage lakes), 921 (exercise effect on blood); **13**: 765, **14**: 656 (B.C. distribution); **16**: 137 (Lake Winnipeg commercial catches); **19**: 113 (growth; reproduction)
B 55: 33 (feed; merganser prey); **56**: 32 (Okanagan L., B.C.); **72**: 41 (Great Bear L.); **94**: 18 (Canadian Arctic & Subarctic); **107** (Great Slave L.)
PRP 32: 21 (salmon predator, Cultus L., B.C.); **67**: 23, **68**: 55, **70**: 10, **74**: 9, **78**: 6 (re salmon in Skeena R. lakes); **88**: 66 (meal)
CCG 3: 12 (record size, Great Slave L.); **6**: 1 (distinction from white sucker), 4 (biology, Great Slave L.)
CVI 12 (constituents; proximate analysis)
S 144: 66 (B.C. distribution)
SS 1208: 90 (full description, B.C.)

Sucker, northern (*see* Sucker, longnose)

Sucker, northern hog (*Hypentelium nigricans*)
J 16: 147 (associations in Ont. streams)
S 481 (Man.)

Sucker, northern mountain (*see* Mountain-sucker, northern)

Sucker, pilot (*see* Sharksucker)

Sucker, quillback (*see* Quillback)

Sucker, red (*see* Sucker, longnose)

Sucker, redfin (*see* Redhorse, northern)

Sucker, redhorse (*see* Redhorse, northern)

Sucker, sturgeon (*see* Sucker, longnose)

Sucker, swordfish (*see* Remora, spearfish)

Sucker, white (*Catostomus commersonii*)
C 1911–14(II): 16 (Lake Huron); **1**: 422 (N Canada)
J 7: 94 (muscle & viscera thiaminase); **8**: 207 (Great Slave L.); **9**: 105 (Ungava Bay); **11**: 690 (parasites of, B.C.); **12**: 499 (Skeena R. basin lakes); **13**: 766, **14**: 656 (B.C. distribution); **15**: 214 (Heming L., Man.); **16**: 147 (associations in Ont. streams), 175 (respiration), 816 (Miramichi R., N.B.); **18**: 893 (proximate composition); **19**: 989 (furunculosis in); **20**: 735 (Lake Huron distribution), 1431 (coloured tags used for population estimates); **21**: 549 (host of *Ligula intestinalis*)
B 94: 18 (Canadian Arctic & Subarctic); **107** (Great Slave L.)
PRA 20: 3 (lack of trimethylamine oxide in tissues), 6 (population in 3 N.S. lakes)
PRP 68: 55, **70**: 10, **78**: 6 (re salmon in Skeena R. lakes)
CCG 3: 12 (record size, Great Slave L.); **4**: 10 (sausage); **5**: 1 (proximate composition of fillets & waste); **6**: 1 (distinction from longnose sucker)
CVI 12 (constituents; proximate analysis; vitamin A)
S 137, 213: 404 (Lake Jesse population, N.S.); **140** (relation to salmon & trout); **206** (in 3 N.S. lakes); **281** (heat & light reactions); **445** (lethal temperature limits); **663, 698** (branchial irrigation mechanism)
SS 117, 119 (James Bay region); **118** (trypanoplasm in blood); **1175** (canning); **1208**: 89 (full description, B.C.)

Suckers (in general)
CNG 64: 68 (productive capacity)

Suctoria
PF 1g (descriptions of Canadian Pac.)
S 648 (re Atl. oyster disease)

Sugars (*see also* Browning; Carbohydrates; Chitin; Glucose; Nucleotides)
C 2: 503 (in Pac. kelps)
J 4: 412 (oxidation during flesh spoilage); **14**: 38 (from hydrolysates of seston, aquatic sediments & soils); **16**: 449, **17**:

603 (muscle ribose); **19**: 519 (origin of free, in muscle)
B 127: 33 (of kelps & seaweeds)
PRP 114: 19 (ribose in frozen tuna)
S 13 (marine animals tissue pentoses); **16** (re bivalve respiration); **22** (pentoses in lingcod tissues); **733, 736** (in steelhead salmon metabolism); **772** (ribose bacterial oxidation); **871** (seawater free amino sugars)
SS 189 (dogfish, gastropod & starfish tissue pentose); **190** (seaweed pentosans); **199** (of invertebrates & fishes); **448, 449, 528** (re bivalve crystalline style)

Sullivan, Charlotte Murdoch
J 10: 187 (speckled trout selected temperatures); **11**: 153 (temperature reception & responses)
B 77 (bivalve larvae, Malpeque Bay, P.E.I.)

Sullivan, George John William
CSS 3–9 inclusive (Maritimes groundfish landings)
SS 1232 (ICNAF 1958 statistics)

Sulpha compounds as preservatives
J 7: 155 (in ice), 221 (effect on bacterial growth)

Sulphate ion
J 16: 7 (ratio to chloride ion in seawater)

Sulphated, sulphonated or sulphurized oils
B 37, 59, 89 (from marine animal oils; *see* their indexes)
PRP 21: 18, **25**: 13, **44**: 4, **45**: 21 (from pilchard & herring oil)

Sulphur compounds (*see also* Hydrogen sulphide)
J 7: 21 (sulphur-containing proteins); **13**: 863, 865 (H_2S and mercaptans in "bilgy" fish spoilage); **21**: 423 (dimethyl sulphide in Atl. cod flesh), 1481 (dimethyl sulphide, etc. in Pac. oysters)
S 796 (in pulpmill effluents)

Sunburn
PRP 35: 6 (possibility of, in fish)

Sund, Paul Nathan
J 16: 351 (Chaetognatha distribution, Gulf of Alaska)

Sunderland, Peter Arne
J 5: 36 (sodium nitrite ice as preservative), 148 (fresh fillet preservatives), 244 (preservative ices)
PRP 14: 14 (porpoise oil analysis); **23**: 16, **27**: 8 (Prince Rupert Harbour herring run); **34**: 16 (dogfish & shark gear & bait); **37**: 7, **40**: 14 (lightly smoked fish keepability); **37**: 17 (spiced surf smelt conserve); **38**: 3 (ultraviolet light for preserving fillets); **39**: 13, **44**: 16 (sodium nitrite as fillet preservative); **39**: 16 (ultraviolet light for sterilizing pickling brines); **40**: 6 (smoking & canning oysters); **41**: 3 (smoking & canning salmon), 15 (sodium nitrite preservative ice); **42**: 10 (chum salmon products); **44**: 12, **45**: 19 (brining fillets to deter spoilage & drip); **45**: 4 (canning halibut cheeks in jelly), 18 (smoking & canning abalones); **46**: 3 (smoking & canning sablefish)
SS 570 (research for fisheries development); **718** (new smokehouse type); **721** (recent advances in fish preservatives)

Sunfish (in addition to following entries, *see* Filefish, orange; Pumpkinseed)

Sunfish, banded (*Enneacanthus obesus*)
J 11: 529 (on vitamin-B_1-destructive diet)

Sunfish, green (*Lepomis cyanellus*)
J 16: 147 (associations in Ont. streams)

Sunfish, longear (*Lepomis megalotis*)
J 16: 147 (associations in Ont. streams)

Sunfish, ocean (*Mola mola*)
C 1902–05: 86 (N.S.), 91 (trematode parasites)
J 16: 513 (inshore N.S. records)
B 68: 330, **68R**: 400 (full description, Pac.); **155**: 417 (full description, Atl.)
PRP 45: 6 (B.C. occurrence)
S 284 (Gulf of St. Lawrence)

Sunfish, redear (*Lepomis microlophus*)
B 119: 94 (fin regeneration)

Sunlight (*see* Illumination; Irradiation; Light, penetration; Light, reactions to; Photosynthesis; *also* other cognate subjects)

Superior, Lake (*see also* Great Lakes)
J 9: 325 (temperature distribution); **19**: 1 (physical & chemical data for trout from), 1085 (relative efficiency of nylon vs. cotton gillnets for lake trout); **20**: 491 (trout interseasonal growth)
PRC 1: 3, 6, 9, 15, **2**: 25 (sea lamprey control)

Superstition (*see also* "Sea serpent")
SS 887 ("overstanding" in fisheries biology)

Surf-grass (*Phyllospadix scouleri* and *P. torreyi*)
B 127: 9 (B.C. resource)
CNG 44: 8 (used by herring as spawning substrate)

Surmullet (*see* Goatfish)

Surveys, fishery (*see also* "Calanus" series; Canadian Fisheries Expedition; Census; Exploration; Hudson Bay (expeditions); *also* names of International Commissions)
C 1917–18: 5 (B.C. sea lion); **3**: 179, 331 (Belle Isle Strait Expedition, 1923)
J 2: 95 (Quoddy herring); **11**: 198 (Gulf of St. Lawrence); **15**: 1131 (from St. Andrews, N.B., 1912–34)
B 42 (Kamloops lakes); **56** (Okanagan lakes); **72** (N.W.T.); **88** (E arctic seas); **94** (arctic freshwater fishes); **98**: 3 (aerial, of Hudson Bay beluga); **102** (bar clam); **108** (Danish seining, Nfld.); **109** (longlining, Nfld.); **111** (Atl. herring); **120** (redfish, Nfld.); **121** (NW Atl. herring); **129** (shrimp, Nfld.); **135** (giant scallop, Nfld.); **140** (sharks); **141** (longlining cod, Nfld. & Labrador)
PRA 32: 8 (N.S. molluscs); **48**: 10 (codworm parasite incidence); **67**: 3 (Irish moss)
PRP 93: 17 (W coast Vancouver Is. salmon streams); **97**: 28 (Canadian fish processing plants)
CAG 5 (photographic, for seals)
S 62 (Hudson Bay region fishes); **137, 198, 213** (Lake Jesse, N.S.); **163** (Jones L., B.C.); **197** (Shuswap L., B.C.); **206** (N.S. lakes); **234** (Malpeque Bay, P.E.I.); **238** (B.C. clams); **290** ("Wm. J. Stewart" cruises); **413** (NW Atl. groundfish); **441** (Greenland); **469** (Canadian Arctic); **587** (Minas Basin & Channel, N.S.)
SS 111, 117, 119 (Hudson & James Bays region); **522** ("Albatross" expedition); **902, 929** (aerial, of seals); **1049, 1338** (herring spawning, aerial observation); **1278, 1285** (IGY Polar Front)

Survival (*see also* Mortality; Revival)
J 13: 599 (young lemon soles); **14**: 952 (of bottom fishes, re Pac. inshore water masses); **15**: 652 (critical stages for fishes); **16**: 880 (pink & chum salmon; correction on **17**: 943); **17**: 725 (herring at low salinity); **19**: 531 (sockeye salmon), 561 (Pac. salmons), 735 (Pac. herring larvae); **20**: 305 (marked & tagged lobsters), 497 (cod, plaice, etc. discarded at sea)
B 119 (re fish populations; *see* its index)
PRA 7: 12 (trout after injury); **10**: 3 (frozen oysters); **35**: 3 (clams after exposure); **39**: 11 (crowded smelt eggs); **70**: 16 (salmon)
PRP 5: 11 (marked sockeye salmon at sea); **26**: 11, **34**: 8, **41**: 6 (pink salmon natural propagation); **32**: 21 (young salmon by predator control); **74**: 5, **104**: 34 (sockeye eggs); **103**: 14, **111**: 18 (transplanted pink salmon eggs); **111**: 3 (fish after Ripple Rock blast); **113**: 16 (coho & chum salmon in flood)
CNG 27 (catch curves for herring)
S 488 (tagged vs. untagged brook trout); **712** (pink salmon at sea); **760** (European oysters transplanted to Canada)
SS 482 (of planted Pac. salmon eggs); **743** (planted Atl. salmon fingerlings); **1210** (giant scallops)

Sustut Lake and nearby lakes, B.C. (*see* Skeena River drainage system lakes)

Sutherland, Donald Herbert
B 60 Preface (Atl. oyster farming)

Sutherland Lake, N.S.
PRA 42: 7 (speckled trout angling yield)

Swain, Lyle Alloway
J 6: 113 (fish liver oil vitamin A adsorption), 326 (dogfish liver oil glycerol yield);

7: 389 (marine animal oil unsaponifiables analysis)

B 59, 89 (marine animal oils chemistry & technology)

PRP 46: 12 (adsorption separation of fish oil components); **48:** 9 (B.C. halibut liver oil industry history); **49:** 13, **50:** 8, **53:** 7 (vitamin A winning by adsorption); **56:** 11, **63:** 32 (dogfish liver oil unsaponifiables); **58:** 3 (B.C. dogfish & shark liver oil industry); **61:** 16 (mackerel shark liver oil); **65:** 67 (vitamin A in various liver oils); **69:** 74, **71:** 12 (brill liver vitamin A); **72:** 41 (arrowtooth flounder liver vitamin A); **73:** 48, 57 (vitamin A from dogfish livers); **76:** 63, **77:** 116 (liver oil vitamin A stability test); **79:** 32 (margarine from herring oil); **79:** 40 (whale liver oil vitamin A); **82:** 20 (vitamin A yields, testing & economics); **92:** 16 (fatty alcohol in B.C. marine tube worm); **93:** 3 (fish oils fatty acid composition); **94:** 24 (B.C. herring oil fatty acids); **97:** 11 (iodine in fish oils as distinct from iodine value); **99:** 6 (sockeye salmon offal oil fatty acids); **103:** 11 (vitamin A stability)

CVI 6 (fish oils vitamin A); **8** (flatfish livers oil & vitamin A)

S 265 (vitamin A reagent dispenser)

SS 782 (dogfish liver oil unsaponifiables determination); **862** (oil chromatographic analysis)

Swallower, black (*Chiasmodon niger*)
B 155: 274 (full description)

Swan Lake, B.C. (NW of Hazelton, B.C.) (*see* Skeena River drainage system lakes)

Swan Lake, B.C. (near Vernon, B.C.)
S 224 (ducks & coots feed)

Swanson Channel, B.C.
PRP 102: 10, **103:** 8 (Pac. cod tagging & fishery)

Swellfish (*see* Burrfish, striped; Puffer, northern)

Swift, Donald Robert
J 21: 133 (brown trout activity cycles)

Swim bladder (*see* Bladder, swim)

Swimming (*see also* Activity; Currents, reaction to water; Speed of swimming)
J 20: 969 (effect of tagging on)

Swingletail (*see* Shark, thresher)

Swiveltail (*see* Shark, thresher)

Swordfish (*Xiphias gladius*)
C 1902–05: 85 (Canso, N.S.), 91 (trematode parasites); **1918–20:** 111 (N.S. fishery)

J 16: 824 (Gulf of St. Lawrence); **18:** 495 (proximate composition)

B 59, 89 (oils & vitamins A & D; *see* their indexes); **130** (life history & economic importance; correction on **J 21:** 1554); **155:** 295 (full description)

PRA 19: 3 ("jellied" condition of flesh); **29:** 17 (liver & viscera vitamin A)

PRP 47: 12 (liver oil vitamin D); **84:** 68 ("jellied" flesh condition)

CFI 18 (canning)

CNG 64: 21 (productive capacity)

CSG 2 (offshore landings, 1938–40)

CVI 17 (flesh vitamins & amino acids)

SS 134 (unutilized resource); **737** (muscle autolysis)

Symbiosis (*see also* Commensalism)
C 6: 13 (*Beroe* and a dinoflagellate)

Symbolophorus veranyi (*see* Lanternfish, largescale)

Symons, Jennie L.
C 1921: 1 (clam bacteria blackening canned clams)

Sympatric occurrence (*see also* Territorialism)
J 18: 793 (*Salvelinus malma* & *S. alpinus*); **20:** 749 (of 2 whitefish species)

Synaphobranchus kaupi (*see* Eel, Gray's cutthroat)

Synchirus gilli (*see* Sculpin, manacled)

Syngnathus fuscus (*see* Pipefish, northern)

Syngnathus griseolineatus (*see* Pipefish, (Pacific))

Synthesis (*see* Enzymes; *also* types of compounds synthesized)

Systematics (*see* Taxonomy and systematics)

T

Tabata, Susumu
J 14: 487 (physical oceanography, Bute Inlet, B.C.); **15**: 91 (Fraser R. estuary shipworm incidence), 429 (sea heat budget off Triple Is., B.C.; correction on **17**: 943); **17**: 61 (NE Pac. anomalous temperature increase), 353 (NE Pac. ocean weather station water characteristics); **18**: 1073 (NE Pac. temporal oceanographic changes)
PRP 100: 8 (Bute Inlet oceanography); **101**: 20 (Hecate Strait oceanography); **104**: 26, **106**: 3 (Steveston Harbour oceanography, B.C.); **104**: 30 (Strait of Georgia surface currents); **108**: 18 (sea–air heat exchange)
CPO 1958-2, -4, -10, 1959-9, -11, -15, -27, 1960-3, -8, -13, -21, -23, 1961-10, -16 (oceanographic observations between Juan de Fuca Strait and ocean weathership, also from weathership)
S 454 (ship's roll effect on current meter); **473** (daily seawater data classification)

Table, for fish processing
PRA 35: 20, **40**: 6, **57**: 9 (for filleting & skinning); **36**: 10 (sanitation of filleting); **62**: 7 (for salt-fish splitting)
SS 873 (sanitation of filleting)

Tactostoma macropus (*see* Dragonfish, arrow)

Taeniotoca lateralis (*see* Seaperch, striped)

Tag recovery devices
J 18: 383, **19**: 149 (radioactivity detector)
PRP 31: 7, **38**: 16 (magnets in pilchard reduction plants); **31**: 11, **64**: 62 (electronic induction detector)
S 446 (for B.C. herring)
SS 646 (for B.C. pilchard & herring)

Tagging methods, returns and interpretation (*see also* International Commission for the Northwest Atlantic Fisheries; International North Pacific Fisheries Commission; Marking; Mortality; *also* names of organisms)
C 3: 265, **4**: 453, 471 (chinook salmon); **3**: 265 (sockeye salmon); **4**: 453 (coho salmon); **6**: 263 (haddock); **8**: 434 (Atl. cod)
J 1: 269, **6**: 291, **20**: 305 (lobster); **4**: 96, **6**: 311, **13**: 219, **14**: 135, 141 (Atl. salmon); **5**: 258, **14**: 687, **15**: 1403, **16**: 247, **20**: 969 (various trouts); **6**: 164 (pilchard); **7**: 416, **16**: 309 (Pac. herring with internal tags); **8**: 374 (B.C. groundfish), 453 (sockeye salmon); **8**: 479, **10**: 459 (lemon sole); **11**: 284 (whitefish), 351 (dogfish); **12**: 134 (wire corrosion); **13**: 599, **17**: 919, **20**: 1213 (maskinonge); **13**: 613, **15**: 19, **18**: 817 (mathematical treatment of derivable information); **14**: 953 (brill); **15**: 831 (lingcod), 1269, **21**: 837 (Atl. halibut); **15**: 1329, **18**: 221 (Atl. herring); **15**: 1371 (Atl. cod & haddock for mortality rates); **16**: 247 (shiners); **17**: 175, **20**: 855 (haddock); **18**: 817 (incomplete reporting); **19**: 315 (tag failure in chinook salmon), 445, **21**: 215 (Atl. cod); **20**: 319 (Great Slave L. fishes), 1431 (sucker & perch with yellow vs. colorless tag), 1553 (special type for freshwater fishes); **21**: 27 (for young Atl. salmon movements), 415 (B.C. female sea lions), 485 (re Alaska sockeye homing), 1051 (for Pac. cod growth & mortality), 1101 (for central B.C. pink salmon growth rate)
B 14, 31, 66, 74, 86 (pink salmon); **14, 31, 96** (chum salmon); **15, 26, 40, 86, 113** (coho salmon); **16, 27**: 9, **86** (sockeye salmon); **21**: 78, **51**: 13, **57**: 32, **99**: 22 (Atl. salmon); **26, 27, 41, 86, 113** (chinook salmon); **27**: 9 (dogfish); **62**: 17, **91**: 11 (crab); **101**: 36, **107**: 6 (Pac. salmons re Babine R. rockslide); **105** (Atl. cod); **119** (mathematical treatment of derivable information; *see* its index)
PRA 1: 10, **14**: 3, **15**: 3, **28**: 9, **64**: 10 (haddock); **15**: 3, **22**: 3, **25**: 3, **26**: 8, **28**: 14, **29**: 6, **35**: 8, **64**: 10, **67**: 6, **72**: 8 (Atl. cod); **28**: 7, **37**: 10, **64**: 3, **69**: 12 (lobster); **50**: 3, **61**: 4 (Atl. halibut); **68**: 20 (Atl. salmon); **70**: 10 (Atl. herring), 28 (spiny dogfish)

PRP 2: 5, **46**: 19, **61**: 8, **62**: 4, **63**: 47, **65**: 77, **70**: 13, **71**: 11, **75**: 40, **78**: 6, **81**: 92, **94**: 5 (sockeye salmon); **2**: 7, **9**: 7, **51**: 8, **62**: 14, **91**: 28, **106**: 10, **111**: 14 (coho salmon); **3**: 8, **9**: 12, **57**: 8, **58**: 8, **63**: 47, **69**: 65, **85**: 79, **102**: 15 (pink salmon); **3**: 9, **9**: 12, **63**: 47, **85**: 79 (chum salmon); **4**: 11, **8**: 15, **67**: 31, **106**: 10, **111**: 14 (chinook salmon); **22**: 21, **89**: 84, **109**: 16 (Dungeness crab); **31**: 11, 19, **35**: 3, **39**: 5, **45**: 14, **50**: 3, **59**: 3, **61**: 23, **64**: 62, **66**: 8, **67**: 31, **70**: 17, **78**: 20, **84**: 63, **93**: 29 (herring with internal tags); **31**: 7, **35**: 9, **38**: 16, 18, **67**: 31 (pilchard with internal tags); **42**: 20, **44**: 14, **56**: 10, **57**: 3, **67**: 31, **100**: 19, **105**: 22, **107**: 19 (lingcod); **46**: 19 (rubber bands); **46**: 19, **53**: 12, **67**: 31, **70**: 23, **92**: 20 (Pac. dogfish); **61**: 22, **64**: 64, **67**: 31 (soupfin shark); **64**: 62 (electronic tag detector); **66**: 20, **67**: 31, **68**: 48, 51, **70**: 23, **72**: 24, **85**: 75, **104**: 11 (lemon sole); **66**: 20, **70**: 23 (butter sole); **67**: 31 (Pac. halibut); **67**: 31, **99**: 28, **103**: 8 (Pac. cod); **70**: 23, **99**: 29, **100**: 16 (brill); **80**: 50, 103, 22 (Pac. salmons); **102**: 15 (tag found in can of salmon)

CCG 1 (Great Slave L. fishes)

CJG 2, 3, 4, 10: 7 (cod & plaice off Nfld.); **4** (redfish)

CNG 17: 21 (albacore); **62** (Hecate Strait Pac. cod)

CSG 24 (lobster); **39** (cod re Seven Isles population)

NRB 8 (lobster); **14**: 9 (Atl. cod)

S 42, 129 (sockeye salmon); **129, 862** (pink salmon); **129, 232, 322** (chinook & coho salmon); **171, 193, 221, 240, 247, 254, 260, 285, 327, 343, 363, 397, 423, 446, 500** (B.C. herring); **173** (landlocked Atl. salmon); **176, 196, 220, 239, 246, 253, 261** (pilchard); **308** (new tag type for smelt); **435, 488** (brook trout); **443** (purposes; methods; effects); **469** (stainless steel walrus tag); **489** (hydrostatic tag); **654, 655, 656, 657, 658, 769, 859** (for distinguishing Pac. salmons stocks); **747** (Atl. salmon 1500-mile migration); **757** (cod transatlantic migration); **852, 853, 854** (re Atl. cod growth studies); **875, 876** (returns from different tag types for Atl. cod); **877** (redfish)

SS 437 (pink salmon); **646** (tag recovery from B.C. herring & pilchard); **775, 798** (pilchard); **785, 805, 820, 865, 897, 923, 948** (B.C. herring); **806, 834** (sockeye salmon); **965** (Pac. salmons at Moricetown Falls, B.C.); **1226** (publicity methods to encourage tag returns); **1301** (Gulf of Alaska salmon); **1378** (Dover sole spawning stock)

Tait, John
S 39 (*Chiridotea* isopod structural & physiological features)
SS 331 (*Balanus* operculum movement mechanism)

Taius tumifrons (*see* Porgy)

Tamura, Toshitake
J 21: 1035, 1543 (scallop sterols), 1519 (oyster sterol metabolism)
S 879 (scallop cholesterol isolation)

Tanaka, Syoiti
J 19: 521 (effect of reducing fishing effort), 1143 (analyzing polymodal distributions, re porgy)

Tanner, H. E.
SS 298 (post-mortem fish flesh changes)

Tanning agents (*see* Leather; Skin)

Tanks, fish stowage (*see* Chilling; Sea water, refrigerated)

Tanks, liquid storage
PRP 24: 23 (cleaning fish-oil drums); **32**: 17, **36**: 16 (calculation of weight or volume of fish oil in)
SS 698, 728 (calculation of weight or volume of contents)

Tansy (*see* Gunnel, rock)

Tapes philippinarum (*see* Clam, Japanese littleneck)

Tapeworms (*see* Cestoda; *Triaenophorus*)

Tapirfish, backfin (*Lipogenys gilli*)
B 155: 164 (known off Maritimes coast)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series*: **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Tapirfish, largescale (*Notacanthus nasus*) (*N. chemnitzi; N. phasganorus;* spiny eel; swordtail eel)

J 16: 506 (Grand Banks records); **18:** 893 (proximate composition)

B 155: 165 (full description)

S 226, 235 (off Sable Is.)

Tapirfish, shortspine (*Macdonaldia rostrata*) (spiny eel)

B 155: 164 (full description)

Taractes longipinnis (*see* Pomfret, bigscale)

Tarletonbeania crenularis (*see* Lanternfish, blue)

Tarpon (*Megalops atlanticus*) (*Tarpon atlanticus*)

J 16: 505 (N.S. record)

B 155: 85 (full description)

Tarpon atlanticus (*see* Tarpon)

Tarr, Hugh Lewis Aubrey (*Note:* CTC = chlortetracycline (Aureomycin) antibiotic; TMA = trimethylamine; TMAO = trimethylamine oxide)

J 4: 327, **5:** 36, 244, **7:** 155 (bacteriostatic ices); **4:** 367, **5:** 187 (bacterial reduction of TMAO); **5:** 148, **6:** 257, **7:** 221 (various bacteriostats for fish & fillets); **5:** 187 (specificity of bacterial triamineoxidase), 211 (fate of ingested TMAO in man), 265, **6:** 74, 233, **7:** 221 (bacteriostat action of nitrite); **5:** 411 (*p*H and salt effect on fish muscle swelling & drip); **6:** 63 (nitrite safety tests on cats & rats), 74, 233 (nitrate role as bacteriostat), 119 (fish muscle bacteria population fluctuations), 303 (bacteria, moulds & volatile bases in dehydrated fish), 349, **10:** 69 (hydroxylamine bacteriostatic action); **7:** 101 (chemical disinfection & metal corrosion inhibitors), 137, 237, 522 (antioxidants & rancidity control), 513, 563 (fisheries products protein amino acids), 552 (culture media peptones from fish flesh), 608 (fish skeletal muscle P compounds); **8:** 74 (Maillard browning of fish products); **10:** 64 (fishery products vitamin B_{12} content); **16:** 791, **17:** 811 (dogfish flesh keeping quality); **18:** 349 (deoxyribonucleic acid salmon enzyme derivatives); **19:** 519 (P compounds & free sugars in fish muscle); **20:** 229 (B.C. herring meal nutrient composition)

B 124 (antibiotics in fish preservation); **126** (fish storage & transport in refrigerated seawater)

PRP 37: 7, **40:** 14 (lightly smoked fish keepability); **38:** 3 (ultraviolet light for fillet preservation); **39:** 16 (ultraviolet light sterilization of pickling brines), 13, **43:** 10 (fillet preservation); **41:** 15, **67:** 36 (germicidal ices); **44:** 12, **45:** 19, **47:** 5, **48:** 19 (control of drip from fresh, brined, & defrosted fillets); **44:** 16 (nitrite as bacteriostat); **49:** 8 (direct counting of fish flesh bacteria); **52:** 24 (volatile bases re canning); **56:** 12 (chemically preserving fish bait); **57:** 16 (bacterial & chemical changes in dehydrated fish); **59:** 7 (germicidal sprays re corrosion prevention), 15 (direct bacteria counts & TMA as quality tests); **61:** 13 (human allergy to fish proteins); **62:** 7 (quality tests), 12 (germicidal sprays); **64:** 57, **66:** 17, **68:** 52, **88:** 67, **108:** 21 (rancidity control in stored fish); **69:** 66 (fish products as protein foods); **71:** 15 (quality preservation); **73:** 50, **77:** 97 (fish products amino acids); **74:** 17, **92:** 23, **98:** 3 (cause of Maillard browning of processed flesh); **75:** 43 (bacteriological media peptones from fish); **78:** 11 (*p*H effect on fish spoilage indicators); **79:** 37 (animal protein factor in fish products); **81:** 80 (mechanical fish washing re fish fillet quality); **83:** 35 (antibiotics effectiveness); **84:** 51 (preparation & application of brines & dips); **85:** 83, **87:** 42, **89:** 79. **90:** 10, 14, **92:** 10, **94:** 27, **99:** 12, **101:** 27, **103:** 18, **108:** 24 (nutritive values of fish meals & condensed solubles); **93:** 23 (antibiotics stability in fish preservation); **95:** 45 (vitamin B_{12} in marine invertebrates & seaweeds); **96:** 25, **100:** 12 (CTC as preservative); **99:** 18, **102:** 14, **112:** 21 (incorporating antibiotics in ice blocks); **99:** 22 (mould inhibitors); **102:** 4 (CTC effect on visceral bacteria *in vivo*); **104:** 7, **112:** 15 (storing fish in refrigerated seawater with & without CTC); **105:** 6, **109:** 14 (tetracycline antibiotics for holding whale carcasses); **105:** 12 (CTC as shucked oysters preservative); **106:** 8 (CTC re food-poisoning bacteria); **110:** 13 (dogfish utilization), 16 (tetracycline antibiotics as fish preservatives); **113:** 3 (condensed herring solubles in turkey poult rations; correction on **J 16:** 931)

CVI 11 (fish products amino acids); **17** (vitamins & amino acids in fish, shellfish & whale products); **20** (antibiotic treatment of whale carcasses)

CVG 24, 26 (herring meal nutritional properties); **25** (nutritional & chemical changes in herring meal lipids)

S 209 (TMA formation re spoilage bacteria population); **299** (fisheries byproducts development possibilities); **310** (fisheries products vitamin B_{12}); **325** (vitamin B_{12} formation from stickwater); **332** (advances in handling fisheries products); **335** (separation & microbiological assay of cobalamines); **337, 375** (antibiotic preservation of flesh foods); **351, 360** (Maillard browning in flesh foods); **370** (detection & control of fish flesh spoilage); **373, 374** (herring meal nutritive value & effect of heat thereon); **400** (fish muscle riboside hydrolases); **404** (antibiotic ices); **417** (mould & yeast inhibitors); **424** (frozen fish oxidative rancidity); **425** (herring meals nutritive value); **438, 466, 571** (bacterial spoilage antibiotic control); **440, 468** (heat destruction of CTC in CTC-treated fish flesh); **467** (vitamin B_{12} synthesis by clam bacteria); **480** (deoxyribose-1:5-diphosphate); **494** (marine fish muscle nucleic acids); **499** (chemical preservation of foods); **510A** (fish transport & storage in chilled seawater); **514** (tetracycline antibiotics comparative effectiveness); **517** (biochemistry of fishes); **524** (fish flesh preservation); **526** (lingcod muscle nucleoside phosphorylase); **537** (spawning migratory salmon biochemistry); **570, 640** (lingcod muscle phospho-sugar enzymes); **607** (fish muscle pyrophosphokinase); **626** (biochemical changes in sexually maturing fishes); **638** (Mg ion re marine bacteria sensitivity to antibiotics); **641, 704** (storage & antioxidant effects on herring meal); **650** (data on production, values, composition, & nutritive values of Pac. Ocean products); **651** (reproductivity of turkeys); **661** (objective fish quality tests); **670, 671, 672** (fish & other food preservation reviews); **718, 719** (preservation by antibiotics & penetrating radiations); **725** (muscle changes during cold storage); **733** (trout metabolism of gluconic acids); **736** (origin of muscle sugars & P); **722** (sugars oxidation by *Pseudomonas*); **818** (incorporation of radioactive materials in salmon milt nucleic acid); **849** (ribomononucleotide formation with salmon milt extract)

SS 689 (TMAO bacterial reduction); **719** (bacterial TMAO-ase); **720, 735** (ultraviolet irradiation & chemical preservatives action); **721** (recent advances in fish preservatives); **734, 1309** (bacteriostatic action of nitrites); **783, 784** (antioxidants for rancidity control); **863** (technical fisheries educational seminar); **924** (inhibitor for enzymic browning of fruits); **949, 978** (microbiological vitamin B_{12} formation & assay); **959** (drying temperature effect on herring meal folic acid); **979** (antibiotics in mink feed); **1006, 1094** (fish re human nutrition); **1050** (bacterial effects on fresh fish); **1095** (Pac. fisheries technology); **1130, 1133, 1309** (antibiotics as preservatives); **1132** (flesh foods preservation problems); **1265, 1346** (processing effects on fish products); **1266** (fishery products); **1309, 1347** (chemical control of bacterial spoilage)

Patent—Canada No. 552,878 (incorporating antibiotics in block ice)

Tartaric acid (*see* Preservatives)

Taste tests of fishery products (taste panels) (*see also* Quality)

J 13: 48 (cooked frozen Atl. oysters), 131 (cooked frozen plaice fillets), 176 (cooked normal & "jellied"-condition plaice fillets), 572 (cooked frozen redfish fillets); **14:** 630, 926 (frozen Atl. cod fillets)

PRP 37: 12 (fresh vs. frozen & stored halibut); **38:** 3 (fresh fillets treated with ultraviolet light); **42:** 16 (quick- vs. slow-frozen salmon); **59:** 12 (kippers smoked with various woods); **88:** 57, **91:** 20 (halibut frozen vs. iced, at sea); **95:** 39 (salmon stowed in chilled seawater vs. ice; correction on **96:** 10)

S 455 (canned sardines); **579** (stored Atl. oysters)

Taste sense in fishes (*see also* Odour, perception and reaction to)
J 11: 114 (re odour perception); **15:** 685 (of roach for trinitrophenol)

Tattersall, W. M.
C 8: 181 (W Canada Euphausiacea & Mysidacea)
J 4: 281 (E Canada Mysidacea)

Taurine
PRP 71: 5 (from squid-canning liquor)

Tautog (*Tautoga onitis*) (black-fish)
C 8: 275 (slime & intestinal bacteria)
J 16: 512 (new sport fishery in N.S. salt-water lake)
B 155: 267 (full description)
S 159 (rare in Passamaquoddy Bay)

Tautoga onitis (*see* Tautog)

Tautogolabrus adspersus (*see* Cunner)

Taxonomy and systematics (The following is not an exhaustive listing; many papers in the Contributions, Journal prior to Vol. 12, and early Studies dealing with these subjects are indexed under the classifications or individual names of organisms, which see. *See also* Nomenclature; Phylogeny; Speciation; Species differentiation (biochemical); Species, new)
J 7: 17 (Enterobacteriaceae); **12:** 97 (whale helminths; correction on **16:** 385); **12:** 121 (Cyamidae Amphipoda), 143 (Folliculinidae Ciliata), 287 (Naticidae Gastropoda), 593 (Chaetognatha), 754 (Atl. sturgeons), 768 (inconnu), 781 (Ungava Bay fishes & invertebrates), 858 (Ungava Bay Copepoda); **13:** 759 (northern B.C. fishes); **16:** 763 (2 redfish subspecies), 903 (2 cutthroat trout subspecies); **18:** 679 (salmonids phylogeny), 1167 (smoothtongues); **19:** 401 (king crab & related species); **20:** 101 (Salmonidae muscle myogen patterns), 417 (burbot), 749 (Squanga L. whitefish, Y.T.), 849 (W Atl. blue whiting), 851 (B.C. blackthorn sculpin), 853 (NW Atl. onychoteuthid squid), 1095 (B.C. black snailfish), 1097 (NW Atl. opah), 1101 (NW Atl. dusky sharks), 1189 (lower Great Lakes white perch & related species), 1315 (arctic Pycnogonida), 1353 (NW Atl. mako sharks), 1505 (B.C. cottid redescription), 1513 (NW Atl. batfish); **21:** 355 (*Pagurus pubescens* hermit crab & closely related species), 461 (comparison between *Argis lar* & *A. dentata* crustaceans), 555 (ostracods & new subspecies *Conchoecia alata minor*), 641 (bacteria re their amino acid composition), 681 (*Lernaeopoda centroscyllii* parasitic copepod), 691 (serologically differentiated Pac. sardine subpopulations), 855 (silvergray rockfish), 863 (NW Atl. porbeagle), 865 (NW Atl. blue shark), 873 (*Caligus clemensi* parasitic copepod), 933 (*Pholis clemensi* gunnel), 971 (redescription of *Holophryxus alaskensis* parasitic isopod), 1129 (Greenland halibut synonymy), 1267 (Pac. salmon key based on scales), 1339 (*Cottus bairdii* & *C. cognatus* sculpins distinguishing characteristics), 1403 (key to B.C. pandalid shrimps), 1505 (key to Canadian Arctic ascidians)
B 68, 68R (B.C. marine fishes); **155** (Canadian Atl. marine fishes)
PRA 25: 12 (Atl. flatfishes); **66:** 20 (two redfish subspecies)
PRP 7: 9 (Kamloops trout)
CCG 1: 1 (Great Lakes lampreys)
S 405 (*Corynosoma* parasitic acanthocephalid synonymy); **441** (Greenland plants, lichens, fungi & algae); **513** (*Cliona* boring sponges); **543** (*Lepeophtheirus* parasitic copepod); **544** (parasitic trematodes); **549** (Prorocentrum dinoflagellates); **798** (dinoflagellates morphogenic factors); **826** (eelpouts)
SS 44 (Actiniaria); **66** (Styelidae); **86** (*Haplobothrium*); **240, 241** (nudibranchs); **250** (ascidians); **409** (ciscoes); **512** (re fishes environment); **595** (rainbow trout species); **631** (*Diphyllobothrium latum*); **973, 1046** (stoneflies); **1009** (*Stephanostomum* trematode); **1208** (B.C. freshwater fishes)

Taylor, Andrew Ronald Argo
PRA 67: 3 (Irish moss survey, Grand Manan)
CSG 23 (eel-grass control)

Taylor, David Hutton
PRP 74: 3 (frozen shrimp storage); **74:** 23, **77:** 100, **78:** 21 (railway refrigerator car improvements)

Taylor, Frederick Henry Carlyle
J 10: 560 (NE Japan ocean fishes collection); **21:** 1317 (Pac. herring spawning)

B 143 (B.C. herring stocks life history & present status)

PRP 68: 48 (lemon soles spawning); **72**: 24 (lemon soles growth rate); **107**: 13 (plywood preservation against wood borers)

CNG 34, 38, 43, 45, 49, 53 (B.C. herring fishery prospects, 1954–60)

S 397 (Vancouver Is. herring population studies); **411** (B.C. herring); **423, 464, 500** (B.C. herring stocks status); **683** (B.C. herring management); **873** (herring stock–recruitment relations)

SS 952 (fur seal studies extended); **1051, 1052, 1141, 1274, 1275, 1276** (B.C. herring research); **1096** (fur seals distribution & feed)

Taylor, George Thomas

PRP 109: 9 (NE Pac. steelhead distribution, age & feed); **113**: 10 (NE Pac. lesser lancetfish)

Taylor, Rev. George William

C 1906–10: 187 (129 B.C. decapod crustacean species)

SS 29 (plea for a B.C. biological station); **100** (address to B.C. Academy of Sciences) **SS 54** (obituary of)

Technological Stations of Board (*see* Station)

Technology of fisheries products (*see* By-products; Station; *also* types of processes and products; names of organisms (for some of which there is a separate heading for their products)

Tedford Lake, N.S.

PRA 20: 6 (fish production)

S 206 (fishes); **213** (feed vs. supply); **229** (poisoning for coarse fish)

Teeth (*see also* following heading)

B 140 (re identification of NW Atl. sharks; interchange Figs. 24 & 28)

SS 514 (cyprinid, re geographical variation)

Teeth, age determination from

J 21: 417 (female B.C. sea lions)

B 118: 5 (ringed seal); **132**: 7 (pilot whale): **137**: 2 (arctic & Atl. seals)

CAG 1: 86 (seal jaws & teeth); **2**: 5 (walrus tusks); **8**: 4 (beluga)

S 386 apparatus for rapid sectioning of seal); **572** (sectioning technique for moose incisors); **578** (Atl. delphinids: structure, sectioning, age); **611** (Pac. harbour seals)

Telemeter (*see also* Echo sounding)

SS 1147 (for depth of midwater trawls)

Television, underwater

J 17: 689 (for herring swimming speed)

PRP 92: 20 (for observing fish)

SS 958 (for observing Pac. sea life)

Temperature, body (*see also* Lethal limits (temperature); Revival; Temperature, reactions to)

C 1: 413 (of fishes)

CNG 17 (Pac. albacore)

SS 431 (re ocean temperatures)

Temperature, reactions to (*see also* Lethal limits (temperature); Revival; *also* names of organisms)

C 1901: 10 (survival without oxygen), **11** (respiration rate); **1911–14(I)**: 73 (mummichog); **2**: 89 (lobster), 95 (marine animals); **4**: 147 (angler egg development), 422 (*Littorina*); **6**: 176 (whitefish spawning); **7**: 45 (*Fundulus* digestion), 447 (*Raja* gastric motility); **8**: 137 (*Raja* tissue), 145 (intestinal motility), 208 (*Raja* arteries), 253 (*Salmo* scales), 417 (haddock abundance), 434 (cod migration)

J 2: 485, **13**: 247, **15**: 1345 (lobster); **3**: 169 (vertebrae number); **3**: 421, **6**: 158, 217, **8**: 241, **9**: 265, **15**: 391, 587, 805, **20**: 525, **21**: 891, 1183, 1227 (Pac. salmons); **4**: 287, **5**: 253, **6**: 449 (Atl. oyster); **4**: 323, **5**: 485, **6**: 90, **11**: 362, **21**: 17 (Atl. salmon); **4**: 392, **17**: 699, 721 (Atl. herring); **5**: 84 (starfish), 258, 461, 485, **6**: 90, **9**: 169, **10**: 187, **12**: 618, **15**: 1403, **20**: 859 (brook trout); **5**: 287 (mould); **6**: 476 (heat stroke of stream fishes); **7**: 169 (goldfish, 490 (*Gonyaulax*); **8**: 134 (amphipods); **10**: 196 (B.C. freshwater fishes), 253, **21**: 139 (phytoplankton); **11**: 153 (by fishes); **12**: 781, **15**: 1189, **20**: 451 (scallop); **12**: 899 (lethal level after exercise of various fishes); **13**: 647 (lemon sole); **15**: 257

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series* **CAG**—Montreal, **CCG**—London; **CFI**—Fish Insp. Lab Halifax; **CGR**—Grande-Rivière **CHO, CHN**—Halifax, **CJG**—St. John's, **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews, **CVI, CVG**—Vancouver, **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

(capelin), 607 (temperature preferred by various fishes), 625 (re distribution & landings of Canadian commercial marine fishes), 1269 (Atl. halibut); **16**: 107 (re Lake Winnipeg whitefish catches); **17**: 221 (re NE Pac. fish distribution), 517 (*Mysis*), 541 (hybrid trout), 871 (algal growth); **20**: 249 (*Triaenophorus* eggs), 373, **21**: 57, 215, 429 (Atl. cod); **20**: 387 (crustaceans), 483 (sea lamprey), 551 (winter flounder), 685, 1519 (zooplankton), 1001 (redside shiner), 1465 (haddock); **21**: 9 (Pac. cod), 183 (NE Atl. plankton), 613 (re avoidance of nets by carp, etc.), 1043 (pike, maskinonge & hybrids), 1533 (rock sole eggs)

B 1: 19 (plaice); **5**: 3, **147**: 23 (lobster); **18**: 4, **105**: 69, **109**: 41, **141**: 55 (Atl. cod); **22**: 15, **131**: 9 (Atl. oyster); **34**: 11 (Pac. oysters); **99** (Atl. salmon); **118**: 77 (ringed seal); **120**: 109 (redfish); **122**: 101 (phytoplankton); **130**: 12 (swordfish); **135**: 24, **145**: 14 (Atl. scallop); **144**: 8 (Atl. smelt spawning)

PRA 2: 14 (Passamaquoddy fishery), 20 (brook trout); **4**: 10, **7**: 10 (Fundy haddock fishery); **7**: 3 (Passamaquoddy herring fishery); **11**: 12 (Fundy hake fishery), 14 (sardine digestive speed); **12**: 3, **17**: 11, **22**: 12, **24**: 6, **33**: 7, **70**: 3 (Atl. cod fishery); **16**: 10 (Atl. oyster development); **17**: 7 (starfish distribution); **49**: 14 (scallop); **62**: 24, **66**: 24 (lobster holding)

PRP 8: 11 (trout propagation); **71**: 3 (re albacore fishing); **80**: 55, **91**: 13 (sockeye salmon fry production); **93**: 30 (emigrating sockeye & coho salmon); **95**: 53 (coho & chinook salmon ascending fish ladder); **109**: 3 (re sudden fish mortality in a harbour)

CJG 2 (redfish); **3** (groundfish near Nfld.)

CNG 17 (re albacore occurrence & catches)

NRB 2: 19 (Atl. capelin); **14**: 98 (Atl. cod)

S 33 (muscles & nerve tissue); **40** (marine animals); **45** (wood-borers); **78** (ascidian digestion); **117** (cultured fish); **190** (re B.C. herring vertebrae); **217** (freshwater fishes); **281** (common sucker); **445** (various marine & freshwater fishes); **503** (re sockeye salmon stress & swimming speed); **628** (review of fishes & lobster thermal requirements)

SS 179 (fish eggs & larvae); **261** (fish tolerance to temperature extremes); **306** (schizopod cardiac rhythm); **405** (re trout scales); **431** (oceanic temperatures re biology); **497, 559** (Atl. cod); **706, 908** (Atl. salmon & trout preference mechanism); **763** (*Cancer* crabs re geographic distribution); **807** (goldfish); **827** (walleye reproduction); **867, 1210** (Atl. scallop); **908** (re salmonids response to electric stimuli); **1126** (haddock); **1128** (carp)

Temperature, refrigerative for preservation (*see* Chilling; Freezing; Refrigeration; Sea water, refrigerated; *also* other cognate subjects)

Temperature of natural waters (The following are of general nature; for specific data and conclusions, *see* entries under Limnology; Oceanography; Temperature, reactions to; Thermometer)

J 21: 647 (aperture cards for bathythermographic data)

B 125: 165, 176 (re corrections for seawater chlorosity & *p*H values)

PRP 78: 14 (notes on use of thermometers)

CPO 1963-2, 1964-6 (airborne radiation thermometer); **1964-5** (shipborne sea-surface temperature continuous recorder)

S 473 (classification of daily seawater temperatures); **777** (improved tripper for seawater bottle)

SS 431 (oceanic, re biology)

Temple, Robert Frank

J 15: 1451 (Bay of Fundy larval herring distribution; correction on **17**: 943)

Templeman, J. F.

SS 1185 (hydrogen bonding)

Templeman, Wilfred

C 8: 421 (lobster mating)

J 1: 213 (lobster body proportions differences), 269 (Gulf of St. Lawrence lobster tagging); **2**: 41 (lobster life-history local differences), 223 (lobster mating), 485 (lobster larvae development); **3**: 339 (lobster egg-laying & hatching habits), 343 (lobster larvae habits & distribution); **5**: 71 (lobster egg-laying & embryonic development); **6**: 228 (lobster sexual dimorphism), 281 (lobster abdominal width re sexual maturity);

11: 11 (first Canadian European ling record), 351 (Nfld. tagged dogfish migrations); **13**: 147 (American plaice jellied condition), 467 (haddock otolith data re growth rate); **14**: 831 (Nfld. fish-fillet nematodes); **15**: 355 (haddock drumming muscles), 517 (round vs. gutted Nfld. haddock quality), 695 (red-fleshed redfish pigment adsorption spectrum); **16**: 763 (redfish caudal pigmentation); **17**: 9 (*Sphyrion* parasitic copepods on redfish); **19**: 445 (Nfld. cod tagging), 811 (Nfld. oceanic puffer), 891 (Nfld. blue ling); **20**: 253 (NW Atl. oceanic puffer), 273 (W Atl. black scabbardfish)

B 43 (Gulf of St. Lawrence lobster fishing); **109** (Nfld. longlining experiment); **120** (N Atl. redfish distribution); **140** (Atl. sharks); **141** (Nfld. & Labrador cod longlining)

PRA 6: 5 (lobster growth); **59**: 3 (bruised plaice); **60**: 14, **69**: 16 (sea fleas eat lobsters); **60**: 15 (salt cod water content); **62**: 4 (international cod landings); **66**: 20 (redfish varieties); **67**: 14 (redfish exploration); **68**: 15 (cod spawning); **69**: 22 (lobster trap lath spacing); **70**: 3 (inshore cod), 28 (Canadian-tagged dogfish caught off Iceland)

NRB 7 (lobster life history); **8** (Nfld. lobster tagging); **10** ("washing" berried lobsters re legality); **11** (Nfld. lobster fishery: statistics; methods; laws); **15** (dogfish life history & liver oil vitamin A); **16** (Nfld. lobster investigations); **17** (capelin life history); **18** (lobster abnormalities; claw plugging; larval stage identification; growth per moult)

NRB 15 (lobster life history)

S 164 (lobster & its fishery); **366** (cod, haddock, redfish & plaice stock divisions); **368** (Atl. fishes abundance re hydrographic conditions); **369**: 25, **497, 497A, 497D, 497F, 557, 584, 679, 723, 784, 785, 787, 788** (ICNAF reports re groundfish research); **413** (NW Atl. groundfish stocks); **555, 874** (ICNAF gear selection research); **729** (redfish vertebral numbers); **730** (redfish distribution off Baffin Is. & Ungava Bay); **791** (NW Atl. cod stocks divisions); **875, 876** (cod tags & tagging comparative returns); **878** (*Lernaeocera* as cod movement indicator)

SS 510 (*Ovalipes* crab record); **804** (Nfld. fisheries research history); **839** (abnormally long-finned trout); **928** (new redfish grounds); **933** (longlining tests); **1398** (ICNAF research)

Tench (*Tinca tinca*) (European tench)
J 14: 654 (B.C. distribution); **15**: 573 lethal hyperactivity)
S 144: 67 (Christina L., B.C.)
SS 1208: 103 (full description; B.C.)

Tenquille Lake, B.C.
SS 443 (protozoa & algae)

Tensile strength (*see* Strength, tensile)

Teredo (*see* Shipworms)

Teredo navalis (*see* Shipworms)

Terhune, Lorne Donald Bruce
J 15: 1027 (measuring seepage through salmon spawning gravel)
CPO 1961-22, -23 (Hecate Strait hydrographic model)
S 644 (marine photosynthesis in plastic bag)

Tern, common (*Sterna hirundo*)
J 14: 729 (lobster predator)
S 548 (off N.S.)

Terramycin (oxytetracycline; OTC) (*see* Antibiotics (tetracycline types))

Terranova decipiens (*see Phocanema decipiens*)

Territorialism (*see also* Migration; Sympatric occurrence)
J 8: 241 (seaward migrating Pac. salmons); **14**: 687 (stream cutthroat trout)
B 132: 75 (pilot whale)
SS 214 (Strait of Georgia marine animals); **1333** (juvenile Atl. salmon)

Terylene (*see* Fibres, synthetic)

Test (*see also* Ascidiacea)
SS 216 (re age determination of ascidian)

Tester, Albert Lewis

J 3: 108 (B.C. herring populations), 145 (herring length & age composition); **4:** 461 (specific gravity test for herring fatness), 478 (seasonal variations in herring proximate analyses); **7:** 403 (herring populations distinction by vertebrae number); **12:** 649 (herring recruitment; mortality; correction on **14:** 997)

B 47 (past & present B.C. herring fishery); **63** (echo sounding for herring); **65** (spring & coho salmon feed); **67** (herring catch statistics)

PRP 12: 12 (B.C. local herring populations); **18:** 10 (herring age & growth); **24:** 6 (herring drift-net selectivity); **20:** 3 (Klemtu summer herring, B.C.); **31:** 11 (herring tagging method), 19 (herring tagging mortality); **35:** 3, **39:** 5, **45:** 14, **59:** 3 (herring tag returns); **36:** 5 (why collect herring statistics ?); **37:** 3 (diurnal time of herring catches), 19 (herring chemical analyses); **38:** 10 (tide & moon re herring catches); **39:** 21 (Klemtu herring & feed); **41:** 10 (Kwakshua herring run, B.C.); **42:** 3, **47:** 14, **53:** 3 (chinook salmon feed); **47:** 10, **50:** 3 (Queen Charlotte Sound herring population); **50:** 14 (herring "belly burn"); **52:** 11 (unusual herring mortality); **53:** 16 (herring eggs high mortality); **55:** 4 (echo sounding for herring), 10 (coho salmon feed); **58:** 17 (Strait of Georgia herring); **61:** 17 (echo sounding for summer herring); **64:** 62 (new type of herring tag detector); **66:** 4 (Atl. vs. Pac. herring & fishery)

CNG 1, 5 (B.C. herring catches); **3** (herring scale recovery); **6, 7, 8** (B.C. herring prospects); **9** (herring catch re spawning); **10** (Baynes Sound herring, Vancouver Is.)

S 146 (B.C. herring investigation results economics); **171, 193, 221, 240, 247, 254, 260** (herring tagging methods, apparatus, insertions & recoveries); **190** (herring vertebrae counts vs. temperature); **244** (modified fish-scale-reading projector); **285** (Vancouver Is. herring investigation results)

SS 462 (B.C. herring populations); **490** (herring spawning quantitative studies); **511** (herring age & growth); **646** (tag recovery devices); **785, 805, 820, 865** (herring tagging); **864** (catch limitations efficiency in herring fishery)

Testes (*see also* Gonads; Milt; Sperm)

J 11: 63 (salmon: androgen assay); **16:** 421, 559 (sockeye salmon: nucleic acids & androgens; correction on page 931), 679 (Pac. herring); **17:** 113 (sockeye: cholesterol, etc.), 347 (sockeye: histidine), 565 (sockeye: P compounds); **20:** 679 (tissue explant culture)

S 776 (spawned sockeye: testosterone in)

Testosterone (*see* Hormones)

Tetra, black banded (*Astyanax mexicanus*) (Mexican tetra)

J 21: 1453 (illumination re vision & schooling)

Tetragonurus cuvieri (*see* Squaretail)

Tetranarce californica (*see* Ray, Pacific electric)

Tetronychoteuthis dussumieri (*see* Squids)

Texture of flesh (*see* Firmness)

Thais lamellosa (a mollusc)

S 13 (pentose compounds in tissues)

Thaleichthys pacificus (*see* Eulachon)

Thaliacea (salps)

C 1918–20: 93 (Gulf of St. Lawrence & off Maritimes)

PRA 23: 13 (*Salpa* foretold hurricane)

S 203, 226, 235 (off N.S.)

Thanatology

S 40 (comparative, of marine animals)

Thawing (*see also* Expansion, coefficient of; Freezing point; Melting point)

J 20: 1183 (effect on brine-frozen tuna); **21:** 115 (cod blocks in water), 719 (electronic: temperatures & drip)

PRP 5: 7 (effects of); **47:** 3 (rates: effect on drip); **50:** 16 (effect on drip)

S 834 (cod blocks in water)

SS 755 (effect on canned herring)

Themisto species (*see also* Amphipoda)

J 6: 419 (in Baffin Is. coastal waters)

S 502 (life history; as production indicator in northern seas)

Theragra chalcogrammus (*see* Whiting (Pacific))

Thermal requirements of fishes, etc. (*see* Lethal limits; Temperature, reactions to)

Thermocline (*see* Limnology; Oceanography; Temperature of natural waters)

Thermodynamics (*see also* Freezing; Refrigeration)
S 582 (re oceanographic data interpretation)

Thermometer (*see also* Radiometer)
PRP 78: 14 (proper use of, for water temperatures)
CPO 1964-5 (shipborne continuous-recording)
S 177 (graphical correction calculation for deepsea recording)

Thiamin (*see* Thiaminase; Vitamin B group)

Thiaminase (*see also* Enzymes; Fox; Mink)
J 7: 94 (in fishes and mussel muscle & viscera); **11:** 529 (athiaminosis in catfish fed carp-egg diet)

Thomas, Martin Lewis Hall
J 17: 591 (anchor dredge for burrowing animals); **21:** 239 (landlocked sea lamprey serum)
PRC 2: 14 (Lake Erie sea lamprey ammocoete biology)
CCG 3: 4 (history of lamprey fisheries)

Thompson, Charles
B 92 (freshwater fish as mink feed)

Thompson, Harold
NRB 1 (Nfld. salmon biology); **6** (Nfld. haddock biology & occurrence); **14** (Nfld. cod biology & economics)
NSB 2 (Nfld. lobster industry)

Thompson, Helen G.
J 5: 1 (*Bacterium salmonicida* viability)

Thompson, S. J.
SS 657 (quahaug growth index variations)

Thompson, Thomas Gordon
SS 477 (chemical oceanographic data reporting)

Thompson, William Francis
SS 80 (B.C. clam beds); **101** (B.C. shellfish beds); **102** (B.C. abalone beds); **120** (new B.C. *Sebastodes*); **806** (Hell's Gate effect on Fraser R. sockeye salmon)

Thomson, Andrew
S 306: 157 (meteorology re Canada's oceans)

Thomson, John Arthur Collingwood
J 19: 497 (Pac. cod fecundity); **20:** 1087 (fertilized cod eggs demersal quality)
PRP 111: 3 (Ripple Rock blast biological effects)
CNG 62 (Hecate Strait Pac. cod tagging, 1960–61)
CNS 1–11 inclusive, **13** (B.C. trawled groundfish landings statistics); **12** (Canada & U.S.A. Pac. trawl fishery effort & catch, 1959–61)

Thomson, William Alexander Brown
J 21: 1481 (oyster sulphur compounds)
PRP 101: 6, 10, **105:** 27 (conversion of B.C. herring stickwater to condensed solubles)
CVG 21 (herring solubles viscosity measurement)
S 407, 408 (stickwater bacterial decomposition at high temperatures)

Threadfish (*Nemichthys avocetta*)
B 68: 122, **68R:** 160 (full description)

Threadgold, Lawrence T.
J 20: 1355 (smolting Atl. salmon body fluid regulation)

Thumb, miller's (*see* Sculpin, slimy)

Thunnus alalunga (*see* Albacore)

Thunnus albacares (*see* Tuna, yellowfin)

Thunnus atlanticus (*see* Tuna, blackfin)

Thunnus germo (*see also* Albacore)
J 18: 1145 (distribution off B.C. & NW U.S.A.)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Thunnus obesus (*see* Tuna, bigeye)

Thunnus saliens (*see* Tuna, bluefin (Pacific))

Thunnus thynnus (*see* Tuna, bluefin (Atlantic))

Thunnus thynnus orientalis (*see* Tuna, bluefin (Pacific))

Thurber, Lou Wintford
J 15: 1355 (Atl. clam drill control)

Thurston, Claude Elmore
J 19: 39 (lake trout physical data & chemical composition)

Thymallus arcticus; T. signifer (*see* Grayling, arctic)

Thymallus arcticus tricolor (*see* Grayling, southern)

Thymidine
S 818 (traced incorporation into salmon milt deoxyribonucleic acid)

Thymus
J 20: 679 (cod tissue explant culture)

Thyroid gland
C 2: 129 (pathological condition in skate); **4**: 115 (iodine content)
J 17: 295 (activity in emigrating Pac. salmon)
S 223 (Atl. salmon)
SS 109 (enlarged, in dogfish); **297** (growth re iodine content); **963** (function in alewife & smelt)

Thysanoessa
PRP 83: 27 (in whale feed)

Tibbles, John James
PRC 1: 22, **2**: 32 (Lake Huron lamprey control preparations); **2**: 25 (Lake Superior lamprey electric barriers)
CCG 5: 21 (lampricides)

Tibbo, Simeon Noel
J 13: 449 (Nfld. herring populations); **15**: 1451, **17**: 133, 735, 933, **18**: 221 (Bay of Fundy herring larvae; exploration; distribution; fishery; correction on **17**: 943); **19**: 517 (NW Atl. whitetip shark & dolphin records), 981 (young captive herring feeding & growth); **20**: 435 (herring stocks following an epizootic), 1067 (underwater observation of herring spawning), 1097 (NW Atl. opah), 1101 (NW Atl. dusky sharks), **1153** (porbeagle flesh palatability), 1353 (NW Atl. mako sharks); **21**: 863 (porbeagle morphometric description), 865 (blue shark morphometric description)
B 111: 35 (exploring for Atl. herring), 85 (Bay of Chaleur herring), 139 (Atl. herring biology), 153 (Nfld. herring populations); **121** (NW Atl. herring fishery); **130** (NW Atl. swordfish biology & fishery; correction on **J 21**: 1554)
PRA 70: 10 (Atl. herring tagging); **72**: 27 (drift-netting Nfld. herring)
CSG 43 (NW Atl. tunas & bonitos)
NRB 16 (Nfld. lobster investigation)
SS 930 (Atl. herring drift-netting); **955** (sardine trawling); **1134** (Nfld. herring exploration); **1167** (echo sounders do not frighten fish); **1267** (Passamaquoddy fishery investigations)

Tidal energy for hydroelectric power (*see also* International Passamaquoddy Fisheries Board; Passamaquoddy Bay)
J 2: 95, **15**: 115, **17**: 127, **18**: 163 (researches re proposal for Passamaquoddy Bay in Bay of Fundy)
SS 310, 484, 1267 (Passamaquoddy Bay proposal); **886** (general; re fisheries)

Tide and tidal effects (*see also* Currents; Drift; Flow; Moon; Oceanography; Pollution; Tidal energy)
J 4: 298 (re oyster spawning); **20**: 1197 (stimulation in model)
PRA 3: 5 (re Atl. mussel edibility)
PRP 22: 3 (general); **30**: 16, **108**: 7, 15 (re ocean currents); **32**: 13 (re gradient currents); **38**: 10 (re moon & B.C. herring fishery)
CNG 57 (removal of pulpmill pollutants)
CPO 1962-1 (stilling well for tide gauge)
S 20, 21 (oscillations in estuaries & oceans); **402** (extreme, in Hudson Strait); **410** (review, B.C. coast); **642** (energy in estuarial embayments)
SS 117, 119 (James Bay); **141** (turn re time); **171** (re fish distribution); **1290** energy transformations in oceans)

Tidepools
S 46 (seasonal disappearance of algae in)
SS 245 (rock borers in); **269** (factors controlling biota)

Tiffany, Lavis Hanford
SS 353 (B.C. algae)

Tilapia esculenta
J 20: 195 (mortality rates)

Tilefish (*Lopholatilus chamaeleonticeps*)
J 16: 510, **17**: 732 (records off Maritimes)
B 155: 243 (full description)

Tinca tinca (*see* Tench)

Tindall, W. B.
C 1918–20: 123 (report on his diatom collection from Parry Sound, Ont.)

Tintinnidae (*see* Ciliata)

Tisbe celata
J 11: 816 (new copepod species parasitic in mussel)

Tissy (*see* Gunnell, rock)

Toad, ribbed (*Ascaphus truei*)
SS 567 (occurrence in Canada)

Toba Inlet, B.C.
J 14: 605, **18**: 907 (physical oceanography)
S 123 (physical oceanography)

Tobacco box (*see* Skate, little)

Tobique River, N.B.
PRA 8: 6 (sardine re salmon angling)

Tolerance (*see* Lethal limits; Poisons; Pollution; Salinity, reactions to; Temperature, reactions to; Toxicity; *also* other cognate subjects)

Tölg, István
J 19: 1005 (temperature re digestion in largemouth bass)

"Tomalley" (*see* Pastes)

Tomato purée or sauce
PRP 63: 38 (with bloater paste; correction on **65**: 66)
CFI 16 (specifications & use in herring & sardine canning); **26** (in herring canning)

Tomcod, Atlantic (*Microgadus tomcod*) (*Gadus tomcod*; frostfish, snig)
C 1918–20: 112 (Cape Breton, N.S.)
J 14: 859 (nematodes in); **16**: 819 (Miramichi Bay, N.S.)
B 155: 208 (full description)
CNG 64: 28 (productive capacity)
S 234 (P.E.I.); **587** (Minas Basin, N.S.)
NSB 8: 22 (life history)

Tomcod, Pacific (*Microgadus proximus*)
B 68: 131, **68R**: 164 (full description)
PRP 79: 35 (feed of)
CNS 1, 8 (B.C. trawl landings by areas)
S 290 (W coast Vancouver Is.)

Tomlinson, Neil
J 16: 421 (spawning migratory sockeye salmon nucleic acids; correction on page 930); **17**: 371 (lingcod muscle P compounds), 449 (Pac. salmons muscle inosine), 603 (lingcod muscle free ribose); **18**: 321 (fish muscle biochemistry re rigor); **19**: 321 (dogfish gelatine), 327 (juvenile salmon olfactory perception), 619 (blood *p*H & mortality in trout & salmon), 733 (lingcod phospholipid content), 997 (fish muscle glycogen); **20**: 95 (sockeye survival after advanced gonad development; correction on **21**: 1553), 187 (nucleotides of frozen lingcod), 1145 (lingcod muscle glycolysis), 1183 (brine-spray-frozen tuna), 1457 (migrating salmon olfactory perception); **21**: 857 (steelhead trout rigor)
PRP 114: 19 (prior storage effect on frozen B.C. albacore)
CVG 33 ("chalky" halibut flesh)
S 421 (bacterial oxidation of propionic acid); **478, 486** (marine bacteria nutrition & metabolism); **505** (antibiotics in food preservation); **534** (muscle extracts ribonuclease activity); **568** (lingcod muscle nuclease); **606** (lingcod muscle phosphomonoesterases); **666** (migrating salmon olfactory perception); **846** (juvenile salmon olfactory perception)

Tomlinson, Raymond Valentine
J 8: 117 (salmonid feed growth factor)
PRP 80: 52 (growth factor for hatchery trout rations)

Tomopterids (*see* Annelida; Polychaeta)

Tongs and tonging
B 60; 57, **131**: 107 (commercial, for Atl. oyster); **102**: 1 (for bar clams)

Tooth (*see* Teeth)

Topliff, Jerome Edward
J 18: 377 (fish oil & vitamin A hypocholesterolemic activities)
S 667 (cholesterol metabolism factors in chickens); **701** (hypocholesterolemic agents from marine algae); **809** (excess vitamin A effect on hen egg production)

Topminnow (*Fundulus* species)
SS 1208: 169 (B.C. introduction for mosquito control)

Torching (*see also* Light, reactions to)
J 17: 135 (for Atl. herring)
B 121: 3, 30 (for Atl. herring)

Torpedo, Atlantic (*Torpedo nobiliana*) (*Narcacion nobiliana; Tetranarce nobiliana;* electric ray; numbfish)
B 155: 67 (full description)
AF 12e: 35 (description)

Torpedo, Pacific (*see* Ray, Pacific electric)

Torpedo californica (*see* Ray, Pacific electric)

Torpedo nobiliana (*see* Torpedo, Atlantic)

Torula epizoa (*see* "Dun"; Moulds)

Touchings, Arthur Jacob
CNG 17: 24 (1948 B.C. albacore fishing experiments)

Toughness of flesh (*see* Firmness; Strength, tensile)

Townsley, Philip McNair
J 20: 243 (flounder kidney tubules muscular action), 679 (marine fish tissue culture), 743 (*Phocanema decipiens* invitro maturation); **21**: 347 (wound healing in cod)

Toxicity (*see also* Botulism; Insecticides; Lampricides; Poisons; Pollution; Shellfish occasional toxicity; *Staphylococcus*; *also* other cognate subjects)
J 10: 278 (antibiotic effect of phytoplankton); **14**: 64 (of plankton); **20**: 525 (mathematical treatment of resistance to); **21**: 17 (Cu & Zn compounds to young Atl. salmon), 1549 (fluoride & wood extracts to lobsters)
PRA 1: 12 (Fe & Zn compounds to salmon)
PRP 98: 22 (amines to spoilage bacteria); **107**: 13 (chemicals to shipworm & gribble); **108**: 27 (arsenite to young salmon)
CHN 18 (of wood of holding tanks, to lobsters)
CSG 38, 42 (Cu & Zn compounds to river salmon)
S 771 (of plankton to *Cristispera* in clam style)

Tracer elements (*see* Biosynthesis; Isotopes)

Trachurops (species ?) (*see* Scad, bigeye)

Trachurus symmetricus (*see* Mackerel-jack)

Trachypterus rexsalmonorum; T. trachypterus (*see* King-of-the-salmon)

Trachyrhynchus murrayi (*see* Grenadier, roughnose)

Transgression (*see* Currents, marine; Territorialism)

Transparency of natural waters (*see also* Heat budget; Light, penetration of; Limnology; Oceanography; Turbidity)
J 12: 355 (Miramichi R. estuary, N.B.); **20**: 119 (subarctic Pac.)
S 27, 43 (Bay of Fundy)

Transplantation (*see also* Culture; Exotics; Hatcheries)
C 1914–15: 119 (lobsters to B.C. coast)
J 3: 169 (salmon from Scotland to B.C.); **4**: 141 (pink salmon); **14**: 797 (possible effects on genetic patterns); **21**: 1155 (molluscs into B.C.)
B 32: 35 (Atl. salmon to B.C.); **34**: 23 (Atl. & Japanese oysters to B.C.); **68**: 95, **68R**: 113 (speckled (brook) trout to B.C.); **68R**: 107 (Atl. salmon to B.C.); **84**: 23 (Atl. salmon to Vancouver Is.); **155**: 105 (pink salmon to Atl. coast)
PRA 8: 6 (California salmon to St. John R., N.B.); **35**: 11 (oysters); **71**: 27 (European oyster to E coast of Canada)

PRP 27: 3 (brown trout & Atl. salmon to B.C.); **28**: 11 (eastern whitefish to B.C.); **72**: 43 (lobster to B.C.)

S 131 (brown trout); **132** (Japanese oyster); **141** (pond culture); **381** (Pac. salmon to Atl. coast); **382** (shad & striped bass); **481** (smallmouth bass to Man.); **760** (European oyster to E Canadian coast); **779** (brook trout); **851**: 70 (re new B.C. fishery potentials); **868** (brook trout into estuaries)

SS 841 (lobsters to B.C.); **917** (Atl. salmon to Lake Ontario); **1145** (insects to replace DDT-killed insects); **1177** (P.E.I. oysters to N.B. & N.S.); **1179** (European oysters to N.B.); **1384** (B.C. pink salmon to Nfld.)

Transport of ocean water masses (*see also* Oceanography)

J 16: 605, **18**: 1073, **19**: 1121 (NE Pac.); **16**: 672 (Knight Inlet, B.C.); **17**: 98 (subarctic Pac.); **18**: 907 (B.C. inlets); **20**: 119 (re barometric pressure in subarctic Pac.)

CPO (*see under* Oceanography, Pacific (NE open waters), for a series of these Circulars on this subject)

S 414 (significance to fishery); **585A, 586** (NE Pac. & Queen Charlotte Sound); **642** (in estuarine embayments)

SS 1271 (in estuarine embayments); **1290** (energy transformations)

Transportation of fishery products (*see also* Air transport; Chilling; Holds; Icing; Packaging; Railway transportation; Sanitation; Sea water, refrigerated)

B 20: 48 (frozen fillets); **33, 147** (live lobsters); **126** (in refrigerated seawater)

PRA 5: 10 (frozen products); **6**: 10 (live lobsters)

PRC 1: 38, **2**: 3 (freshwater fish, in chilled freshwater)

CVG 30 (chilled salmon on packer vessels); **32** (herring meal in bulk)

S 164 (live lobsters); **510B** (frozen Atl. fishery products); **675** (lack of application of principles of)

SS 642 (salt fish); **845, 878** (spoilage problems); **951, 996** (general); **1117** (in chilled brine, Ceylon)

Traps (*see also* Fences, counting; Lamprey, sea; Net, fixed)

B 30: 6, **62**: 25, **91**: 7 (commercial types for Dungeness crab); **58**: 24 (experimental for Margaree R. salmon, N.S.)

PRA 34: 22, **69**: 22 (lath spacing for lobster); **63**: 3 (green crab); **70**: 3 (for inshore Atl. cod)

PRP 11: 18, **76**: 81, **94**: 61 (Dungeness crab); **101**: 3 (for shrimp & prawn prospecting)

CNG 35, 67 (prawn)

CSG 4, 11, 14, 24 (lath spacing for lobster); **13** (eel-pot)

NRB 7: 22 (lobster)

S 648: 453 (oyster for mice)

SS 843 (for young migrating sockeye salmon); **1056, 1187** (lobster); **1230** (eels)

Trason, Winona Bethune (*see also* Bethune, Winona Jean)

J 21: 1505 (arctic ascidians)

Trawl, beam; Beam trawling (*see also* International Commission for the Northwest Atlantic Fisheries)

B 54: 11 (commercial, for lingcod); **61**: 3 (offshore Atl. cod)

CNG 31 (in shrimp prospecting)

Trawl, bottom (*see also* International Commission for the Northwest Atlantic Fisheries)

B 101: 65 (for investigation of Atl. herring)

PRC 2: 3 (Marinovich type, for Lake Erie smelt)

S 584B (top chafing gear studies)

Trawl, drag; Drag trawling

B 70: 6 (for Atl. halibut)

Trawl, line (*see* Longlining)

Trawl, mid-water; Mid-water trawling

B 104, 123 (for B.C. herring); **111**: 69 (in Atl. herring investigation)

PRC 2: 5 (for Lake Erie smelt)

PRP 98: 21, **102**: 19 (for B.C. herring)

CNG 36 (development for B.C. herring); **48** (depth determination method)

SS 1147 (depth telemeter for); **1148** (new type of headline rope); **1180, 1205** (new type); **1293** (Lake Erie use)

Patents—Canada No. 608,969 (mid-water fishing trawl for herring & the like); 612,992 (aluminum dual-purpose midwater bottom otterboard); Application case No. 3255 (improved mid-water trawl)

Trawl, otter; Otter trawling (*see also* International Commission for the Northwest Atlantic Fisheries)

C 6: 463 (survey, Hudson Bay)

J 12: 930 (Lake Winnipeg burbot)

B 1: 9 (plaice); **3**: 8 (for angler fish); **25**: 22, **69**: 8 (haddock); **54**: 11 (commercial for lingcod); **111**: 65 (for Atl. herring investigation); **120** (commercial for redfish); **121**: 30 (for NW Atl. herring)

PRP 62: 24 (log-book recording for B.C. fishery); **73**: 55 (tests of effects on sea-bottom); **88**: 62 (determination of working gape); **101**: 3 (for shrimp prospecting); **102**: 10 (growing use for Pac. cod); **107**: 19 (lingcod catches, vs. catches by hand lines); **111**: 20 (B.C. landings for mink feed)

CJG 1–7 inclusive (Nfld. experiments & landings, 1953–59)

CNG 31, 35, 55 (for shrimp prospecting)

S 850, 874 (codend meshes & hooks selective action)

SS 776 (Hecate Strait groundfish); **900** (vs. longlining for Atl. groundfish); **1257** (codend selectivity re chafing gear types)

Trawl fishery (general) (*see also* International Commission for the Northwest Atlantic Fisheries)

B 139 (review, Strait of Georgia)

PRP 66: 20, **70**: 23 (tagging re B.C. flatfish fishery); **84**: 64 (lingcod in Strait of Georgia); **100**: 16 (W coast Vancouver Is. brill)

CNG 61 (mesh regulation, Strait of Georgia)

CNS 1–11 inclusive, **13** (B.C. landings by areas, 1945–63); **12** (Pac. coast of Canada & U.S.A. effort & catch, 1959–61)

S 630 (re radioactive wastes disposal at sea)

SS 955 (Bay of Fundy sardines); **970** (B.C.); **1115, 1131** (Ceylon); **1193** (methods in France); **1224** (Spanish pair-trawling)

Treadwell, Aaron Louis

C 7: 277 (new polychaetous annelid, N.B.)

J 3: 348 (new polychaetous annelid, N.S.)

AF 9b (Canadian Atl. Polychaeta)

Trefry's Lake, N.S.

PRA 26: 6 (copper sulphate for poisoning undesired fish)

Trematoda, parasitic (flukes) (*see also* Parasites)

C 1902–05: 91 (of Canadian Atl. fishes)

J 2: 335 (of B.C. marine fishes); **11**: 267 (of E Pac. marine mammals), 673 (of B.C. freshwater fishes; correction on **12**: 941); **11**: 954 (of Canadian Atl. flounders), 963 (of Canadian Atl. winter flounder; correction on **12**: 942); **12**: 97 (of B.C. whales)

S 442 (anomalous vitelline development in *Hemiurus*); **462** (new *Genolinea* species); **544** (taxonomy of *Lecithophyllum, Aponurus* & *Brachadena*); **699** (*Lampritrema* in N Pac. pomfret & salmons); **869** (goldeye as new host for *Paurorhynchus hiodontis*)

SS 12 (notes on); **19** (of Canadian fishes); **22** (of Canadian vertebrates); **124** (ectoparasitic turbellarian); **302** (on *Fundulus*); **496** (*Stephanostotum* uroproct); **558** (endoparasitic on Pac. fishes); **1009, 1101** (*Stephanostotum* morphology, taxonomy & life cycle)

Tremblay, Jean-Louis

PRA 30: 5 (lobster biology); **33**: 7 (water temperature re cod fishing); **35**: 8 (cod migration)

SS 576 (list of fishes from Trois Pistoles, Que.); **601** (new *Lycodes* species)

Trevor-Smith, Edward

J 21: 255 (migrating salmonids glycogen & lactate)

Triaenophorus crassus (tapeworm) (*see also* Cestoda; Pike, northern; Whitefish, lake)

C 7: 341 (biology in *Coregonus* & *Leucichthys* species), 377 (in Hudson Bay drainage system fishes)

J 6: 334 (effect on whitefish & tullibee growth); **7**: 186 (in Great Bear L. trout); **8**: 207 (in Great Slave L. fishes), 469 (re taxonomy of Lake Winnipeg ciscoes); **11**:

1 (in trout-perch, Heming L., Man.), 884 (distribution & hosts); **14**: 651 (possible spread in B.C.); **15**: 203 (Heming L. studies); **17**: 81 harmlessness in pup rations); **18**: 441 (in trout, Lac la Ronge, Sask.); **20**: 249 (temperature re egg hatching rate), 841 (upper lethal temperature for eggs), 1089 (measurements of immature stages)

B 72 (in Canadian northern lakes fishes); **76** (re whitefish quality control); **95** (review of infestation problem in Canadian lakes)

PRC 1: 31 (biology & control in Canadian lakes); **2**: 48 (control by pike host control), 51 (eggs & first intermediate stages)

PRP 77: 95 (detection in whitefish by X-rays)

S 180 (maturation & egg hatching); **311** (poisoning for control); **591** (experimental infection of copepod); **654, 655, 656, 657, 658, 769, 817, 859** (re distinguishing Pac. salmons stocks)

SS 536 (Canadian allied species); **988, 1249** (control); **1221** (life history)

Triaenophorus nodulosus (tapeworm)
B 95: 2 (description)
PRC 2: 51 (adult stage in pike)
S 591 (infection of copepod)
SS 971 (new host)

Triaenophorus stizostenionis (tapeworm)
B 95: 2 (description)

Triamineoxidase (*see* Enzymes; Quality; Trimethylamine; Trimethylamine oxide)

Trichodon trichodon (*see* Sandfish)

Triggerfish, gray (*Balistes capriscus*) (*B. carolinensis*)
C 1902–05: 85 (N.S.)
J 16: 513, **17**: 732 (records off N.S.)
B 155: 412 (full description)
S 226 (Halifax Harbour)

Triggerfish, queen (*Balistes vetula*)
B 155: 413 (record of)

Triggs, Rosalie Elizabeth
J 12: 329 (shipboard haddock quality standards)
PRA 55: 24 (contaminated ice in holds)

Triglops beani (*see* Sculpin, ribbed; *also* Sculpin mailed)

Triglops macellus (*see* Sculpin, roughspine)

Triglops murrayi; ***T. ommatistius*** (*see* Sculpin, mailed)

Triglops nybelini (*see* Sculpin Nybelin's; *also* Sculpin mailed; Sculpin ribbed)

Triglops pingeli (*see also* Sculpin, ribbed (Atlantic))
B 155: 362 (distinction from *T. murrayi*, the mailed sculpin)

Triglops thompsoni (*see* Sculpin, fourhorn)

Trigonolampa miriceps (*see* Dragonfish, threelight)

Trimethylamine (TMA) (*see also* Dimethylamine; Enzymes; Fillets; Flesh; Spoilage; *also* Trimethylamine oxide (TMAO))

J 3: 77, 441, **16**: 223 (as test for cod spoilage); **4**: 63 (origin in cod spoilage), 327, **5**: 148 (test for effectiveness of preservatives); **4**: 412 (index for toxic spoilage products); **5**: 32 (vs. dimethylamine in cod spoilage), 121 (*p*H effect on production by spoilage bacteria), 211 (oxidation to TMAO in man); **6**: 1, 53, 303, 403, **7**: 449, 580, **8**: 111, **13**: 21, 212, 292, 560, **15**: 701, 717, 729 (as index of quality &/or spoilage); **6**: 351, **7**: 576 (estimation method); **7**: 17 (bacterial production from choline), 128 (production by various bacteria); **12**: 333, **15**: 521 (quality index for haddock); **13**: 863 (in "bilgy" spoilage); **14**: 45 (in marine sediments & seston), 617 (production during fish spoilage by *Pseudomonas*), 771 (content in nitrite-treated fillets); **16**: 43 (re lipid hydrolysis in fish flesh), 555 (comparisons for use in grading freshness), 747 (relation to proteolysis); **17**: 475 (quality test for shrimps), 595 (inhibition by benzoate), 811 (in stored gutted dogfish); **18**: 295, 303, 483, 495, 893 (amount in various Atl. fishes before or after spoilage), 851 (in salted cod)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series*: **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo, **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

B 126: 44 (re cod held in refrigerated seawater)

PRA 18: 7 (production in salt-cod juice); **20**: 3 (from TMAO in various fishes); **21**: 16 (vessel hold temperature effect on production); **23**: 6 (role in spoilage); **24**: 3, **38**: 10 (re cod fillet spoilage); **27**: 10, **30**: 10 (as spoilage test); **34**: 3 (colour test for); **36**: 10 (re filleting table sanitation), 19 (re smoked cod fillet storage); **37**: 3 (increase in iced cod); **41**: 4 (re cod fillet palatability); **44**: 8 (formation lessened by chilling products); **55**: 17 (in fillets after fish washing & gutting at sea); **60**: 9 (vs. fillet bacteria counts); **67**: 23 (re redfish fillet quality)

CHN 3 (as fillet spoilage index)

S 209 (vs. viable bacteria in spoilage); **379** (antibacterial action); **456** (non-enzymic formation from TMAO); **540** (in wrapped antibiotic-treated fillets); **575** (best determination method)

SS 689, 719, 876, 877 (from bacterial reduction of TMAO); **786** (from bacterial action on choline)

Trimethylamine oxide (TMAO) (*see also* Enzymes; Spoilage; *also* Trimethylamine (TMA))

J 4: 63 (precursor of TMA), 229, **8**: 314, **18**: 483, 495, 893 (amount in various Atl. marine fishes); **4**: 252, 367, **6**: 194, 243, **8**: 195, **9**: 148 (reduction by bacterial enzyme to TMA, etc.); **4**: 267 (role in *Achromobacter* respiration), 355, **7**: 561 (*p*H effect on reduction to TMA); **5**: 200 (re spoilage volatile acids), 203 (effect on cod juices buffer capacity), 211 (excreted unchanged when ingested by man); **6**: 403 (in cod spoilage), 491 (effect on bacteria growth); **7**: 421, 461, 528, 536 (nitrite effect on reduction to TMA), 567 (effect on bacterial reduction of indicators); **8**: 309 (estimation method), 314 (amount in marine invertebrates); **12**: 646 (absence in sturgeon muscle); **14**: 771 (effect of antibiotics on reduction to TMA); **16**: 13, 21 (non-reduction to TMA by *Pseudomonas* bacteria); **17**: 595 (benzoate inhibition of reduction), 895, **18**: 285 (biosynthesis in lobster; correction on **21**: 1553); **19**: 505 (biosynthesis in marine crustacea); **21**: 765 (biosynthesis in marine teleosts)

PRA 20: 3, **23**: 6 (amounts in Atl. fishes & role in spoilage)

S 456 (non-enzymic reduction); **542** (in teleost excreta)

SS 689, 719, 876, 877 (bacterial reduction to TMA)

Trimmings (*see* Wastes recovery)

Triple Island Lightstation, B.C. (*see also* Lighthouse and lightship oceanographic stations, B.C. coast)

PRP 90: 16, **91**: 3, **98**: 6 (oceanographic data collection)

S 473 (classification of daily sea temperatures & salinities)

Trites, Ronald Wilmot

J 13: 385 (oceanography of Chatham Sound, B.C.); **14**: 605 (heat budget & freshwater transport in B.C. inlets); **15**: 79 (surface water circulation over Scotian Shelf), 1247 (water layers in Laurentian Channel); **17**: 377 (Bay of Fundy estuary), 743 (Quoddy Region currents); **18**: 163 (Passamaquoddy oceanography); **19**: 895 (electromagnetic measurement of tidal flow), 975 (Quoddy Region oceanography)

B 111: 195 (Gulf of St. Lawrence surface oceanography; correction on **J 16**: 386)

S 472 (water movements re ocean floor)

Trolling

J 16: 95 (fatigue effects on salmon)

B 142: 3 (chinook & coho salmon: gear, methods & catches)

PRP 101: 12 (conditions for salmon); **103**: 3 (selectivity of lures for salmon); **106**: 10, **111**: 14 (lures for young salmon for tagging)

CNG 20 (& lures for albacore)

S 322 (salmon)

SS 355, 356, 357, 999, 1162 (B.C. salmon)

Trophic level

J 14: 1 (of lakes)

Tropomyosin (*see also* Myosin)

J 16: 53 (isolation from cod muscle); **18**: 501 (amino acids of, in Atl. cod, etc.); **19**: 1095 (enzymic digestion of, in cod)

Trout (general) (*see also* names of following individual species; *also* Dolly Varden)

J 15: 791 (early B.C. investigations); **18**: 679 (osteology & phylogeny)

PRP 8: 11 (propagation re temperature); **11**: 10 (feed re growth); **15**: 7 (furunculosis); **19**: 11 (maturity, age, length & feed of southern B.C.); **30**: 9 (development of hooked snout); **32**: 21, **91**: 13 (preying on sockeye salmon fry)

S 141 (B.C. pond culture objectives); **163** (Jones L., B.C.); **689** (ponds in Canada)

SS 135 (flesh colour); **367** (critical factor affecting B.C. lakes production); **608, 700** (B.C. studies); **752** (effect of moon on fishing); **765** (scale pattern & counting methods); **817** (lateral line development); **828** (Nelson R., Man.); **839** (abnormally long-finned); **847** (Paul L., B.C.)

Trout, brook (*Salvelinus fontinalis*) (eastern brook trout; eastern speckled char; eastern speckled trout; speckled char; sea trout) (*see also* Trout (general))

C 2: 135 (planting survival); **3**: 365, **5**: 203 (planting in Forbes Brook, P.E.I.); **8**: 18 (Hudson Bay)

J 2: 299, **3**: 323, **4**: 48 (predation by birds); **4**: 302 (scale growth), 491 (current effect on movement); **5**: 176, 258, 471 (life history in Moser R., N.S., & at sea), 461, **10**: 187, **11**: 153, **15**: 607 (temperature preferences & responses); **5**: 485 (lethal high temperature); **6**: 24 (copepod parasite), 90 (diurnal feeding activity), **7**: 169 (cruising speed); **8**: 383 (limnology & angling in N.B.); **9**: 95 (Ungava Bay), 169 (anadromous & freshwater population comparisons); **10**: 62 (bacterial flora of fasting); **11**: 255 (Strait of Belle Isle), 685 (parasites of B.C.), 904 (re chars taxonomy); **12**: 210 (in lakes near St. Andrews, N.B.), 387 (resistance & tolerance to reduced oxygen; correction on page 942), 618 (management in Copper L., N.S.); **13**: 799 (fecundity); **14**: 153 (death of ova from electricity), 654 (B.C. distribution); **15**: 607, **17**: 541 (hybrid with lake trout); **15**: 1145 (review of E coast investigations), 1403 (movements in fresh & salt water); **16**: 147 (occurrence & associations in Ont.), 175 (respiration), 814 (Miramichi R., N.B.), 887 (production increased by farmland drainage); **17**: 677 (catch re fishing season); **18**: 383, **19**: 149 (marking with radioactive Fe & Cs compounds); **18**: 679 (osteology; phylogeny), 1153 (pond fishing); **19**: 625 (observations on behaviour), 989 (furunculosis carrier); **20**: 101 (muscle myogen pattern), 327 (pond formation, movements & angling success), 347 (opercular apparatus organogenesis), 859 (light & temperature influence on reproductive cycle), 899 (atresia in maturing ovaries)

B 7: 19 (Langerhans islets tissue); **32**: 40 (description, life history, habits, B.C.); **68**: 95, **68R**: 113 (full description, B.C.); **79** (lower Nelson R. region, Man.); **84**: 24 (Cowichan R. system, B.C.); **155**: 114 (full description, E Canada)

PRA 2: 20 (respiration); **7**: 12 (survive torn gills); **17**: 8 (planting after poisoning coarse fish), 10, **43**: 3 (rearing in fertilized water); **20**: 6, **36**: 6, **42**: 7 (production from certain N.B. & N.S. lakes); **35**: 16 (lake-planted fingerlings movements); **38**: 3, **43**: 9, **58**: 21 (yield from P.E.I. pond & stream); **47**: 3 (production re rock formations)

PRP 19: 11 (growth & feed, southern B.C.)

CSG 8 (poisoning lakes improves fishing)

NRB 9 (Nfld. study)

NRS 6: 4 (Nfld. conservation)

S 101 (muscle heat capacity); **137, 213**: 399 (Lake Jesse population, N.S.); **140** (re sucker); **144**: 63 (B.C. distribution); **187** (spawning urge); **205** (past & future culture); **206** (of 3 N.S. lakes); **234** (Malpeque Bay, P.E.I.); **263** (scale pattern & counting); **318, 574** (P.E.I. fishery); **321** (stream movements); **341, 459** (farming & predator control, Crecy L., N.B.); **384** (electrofishing); **385** (planting in improved waters); **419** (P.E.I. stream standing crops); **435** (counting-fence efficiency); **445** (lethal temperature limits); **481** (Man.); **488** (survival & growth of tagged vs. untagged); **489** (hydrostatic tag for); **709** (stream improvements); **763** (re bottom fauna in fertilized lake); **779** (transplanta-

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tion); **864** (retention of dietary fatty acids pattern); **868** (planting in estuarial waters)

SS 111, 117, 119 (sea run, Hudson & James Bays); **392, 899, 947, 977** (P.E.I.); **507** (in Ont. streams ecology); **520** (spawning period); **654** (production & disease control); **660** (new copepod parasite); **664, 809, 861** (stocking); **706, 908** (temperature preference mechanism); **895** (improving angling); **908** (response to electric stimuli); **1039** (Que. hatchery diseases); **1208**: 63 (full description, B.C.)

Trout, brown (*Salmo trutta*) (Loch Leven trout) (*see also* Trout (general))

J 3: 169 vertebrae number, B.C.); **5**: 448 (Cowichan R. system, B.C.); **16**: 147 (associations in Ont. streams); **17**: 717 (re Passamaquoddy tidal power project); **18**: 679 (osteology; phylogeny); **20**: 769 (stream aquarium behaviour); **21**: 133 (activity cycles)

B 32: 36 (description; life-history; habits); **68**: 90, **68R**: 108 (full description, B.C.); **84**: 21 (Cowichan R. system, B.C.); **119** (population estimate); **155**: 111 (description of E Canadian)

PRP 15: 15, **18**: 14, **19**: 6 (egg & fry planting; marking); **22**: 7 (recoveries of marked); **36**: 12 (spawning run, Cowichan R. system, B.C.)

NRB 9 (Nfld. study)

NRS 6: 8 (Nfld. conservation)

S 131 (introduction into B.C.); **141** (B.C. pond culture objectives); **144**: 63 (in Vancouver Is. rivers); **157** (scale development); **263** (scale pattern & counting methods); **481** (Man.); **837** (two giant specimens, Nfld.)

SS 551 (killed by hooked seeds of plant); **716** (Vancouver Is.); **1039** (Que. hatchery diseases); **1208**: 64 (full description, B.C.)

Trout, bull (*see* Dolly Varden)

Trout, coastal cutthroat (*Salmo clarkii clarkii*) (cutthroat trout) (*see also* Trout (general))

J 3: 169 (vertebrae number); **5**: 448 (Cowichan R. system, B.C.; feed); **10**: 548 (migration deflection experiments); **11**: 682 (parasites); **12**: 499 (Skeena R. system; ecology); **14**: 203 (scale differences re steelhead trout), 655 (B.C. distribution); **15**: 791 (early B.C. investigations); **16**: 903 (morphology distinction from *S. clarkii lewisii*); **18**: 679 (osteology; phylogeny)

B 32: 28 (description, life-history, habits, B.C.); **68**: 89, **68R**: 111 (full description); **84**: 20 (Cowichan R. system, B.C.)

PRP 19: 11 (growth & feed, southern B.C.); **27**: 3 (classification); **65**: 70 (sudden mortality); **66**: 12, **68**: 55, **69**: 70, **74**: 6 (Skeena R. drainage system lakes); **87**: 39, **92**: 18, **104**: 38 (sport fishery, Cultus L., B.C.)

S 85 (general description; B.C. distribution); **144**: 62 (B.C. distribution); **148** (predation on pink salmon fry); **157** (scale development); **252** (oral immunization against *B. salmonicida*); **263** (scale pattern & scale counting methods)

SS 884 (merganser predation on); **1208**: 66 (full description, B.C.)

Trout, Cranbrook

SS 1208: 70 (hybrid from rainbow × cutthroat trouts)

Trout, cutthroat (*see* Trout, coastal cutthroat)

Trout, Dolly Varden (*see* Dolly Varden)

Trout, eastern brook (*see* Trout, brook)

Trout, gray (*see* Trout, lake)

Trout, Great Lakes (*see* Trout, lake)

Trout, hybrid

J 15: 607 (brook × lake: preferred temperature; vertical distribution); **17**: 541 (brook × lake: life history)

B 32: 35 (rainbow (Kamloops) × coastal cutthroat)

S 481: 107 (brook × lake: culture & stocking in Man.)

SS 1208: 70 (rainbow × coastal cutthroat culture as Cranbrook trout)

Trout, Kamloops (*Salmo gairdnerii*) (*S. gairdnerii kamloops*; *S. kamloops*) (*see also* Trout, rainbow; Trout, steelhead)

C 8: 253 (temperature effect on scale number)

J 2: 359 (biometrical study, Kootenay L.); **3**: 23 (diet, Paul L.), 169 (vertebral count); **4**: 69 (spawning run fluctuations, Paul L.); **6**: 246 (plantings in Cowichan L.); **8**: 117 (salmon organs extract as growth factor), 125 (fertility of eggs & sperm after storage); **10**: 548 (migration deflection experiments), 196 (upper lethal temperature); **11**: 683 (parasites); **12**: 742 (scale diameter re body length), 917, **14**: 117, **15**: 573, **16**: 391, **17**: 487 (effects of exercise on blood characteristics; correction on **16**: 929); **15**: 791 (early B.C. investigations); **18**: 321 (muscle biochemical changes re rigor)

B 32: 17 (description, life-history & habits, B.C.), 35 (hybrid with coastal cutthroat trout); **42** (productivity studies, Kamloops region); **56**: 29 (Okanagan region); **68**: 93, **68R**: 111 (description (under steelhead trout)); **84**: 19 (Cowichan R. system)

PRP 7: 9 (relations, variability, local common names); **8**: 11 (temperature for hatchery propagation); **11**: 10, **19**: 11 (feed re growth); **13**: 8 (feed of); **19**: 3 (prey of squawfish); **22**: 7 (Paul Creek spawning run)

S 85 (general description; B.C. distribution); **144**: 62 (B.C. distribution); **157** (scale development); **163** (Jones L. plantings & survival); **263** (scale pattern; scale counting methods)

SS 406, 596 (general); **434** (propagation); **701** (external characteristics); **731** (head lengths re environment); **1208**: 70 (hybrid with cutthroat trout), 71 (full description, B.C.)

Trout, lake (*Salvelinus namaycush*) (*Cristivomer namaycush*) (gray trout; Great Lakes char; Mackinaw trout)

C 1911–14(II): 28 (Lake Huron); **1**: 432 (Lake Athabaska)

J 7: 176 (Great Bear L.); **8**: 207, **11**: 827, **20**: 319 (Great Slave L.); **9**: 94 (Ungava Bay); **11**: 5 (catch & feed, Algonquin Park), 686 (B.C. parasites), 904 (taxonomy re E Canada chars); **12**: 487 (Ungava), 499 (Skeena R. basin); **13**: 765, **14**: 656 (B.C. distribution); **14**: 645 (blood lactic acid); **15**: 607, **17**: 541 (hybrid with brook trout); **15**: 749 (Lake Opeongo, Ont.); **18**: 423 (Lac la Ronge, Sask.), 697 (osteology; phylogeny); **19**: 39 (physical characteristics & chemical composition of 2 Lake Superior subspecies), 1085 (efficiency of nets for); **20**: 319 (movements of tagged, Great Slave L.), 491 (intraseasonal growth in Lake Superior); **21**: 977 (zoogeography)

B 32: 39 (as B.C. game fish); **72** (Yukon, Mackenzie District, Great Slave L., Great Bear L., Lake Athabaska); **84**: 25 (plantings in Cowichan L., B.C.); **107** (Great Slave L. fishery); **119** (survival; fishing rate)

PRC 1: 41 (Great Slave L.)

PRP 67: 23, **70**: 10, **74**: 6, **78**: 6 (in Skeena R. drainage system lakes); **75**: 35 (smoking of)

CCG 1 (size in Great Slave L.); **3**: 8 (record size, Great Slave L.); **4**: 10 (smoked)

CNG 64: 62 (productive capacity)

CVI 13 (constituents, proximate analysis & vitamin A)

S 144: 63 (B.C. distribution); **481** (Man.)

SS 117, 119 (James Bay region); **1029** (beginning of Great Slave L. fishery); **1058** (age & size, Great Slave L.); **1208**: 58 (full description, B.C.)

Trout, Loch Leven (*see* Trout, brown)

Trout, Mackinaw (*see* Trout, lake)

Trout, Montana black-spotted (*see* Trout, Yellowstone cutthroat)

Trout, mountain cutthroat (*Salmo clarkii alpestris*)

C 6: 394 (description as new subspecies)

J 11: 550 (homing experiment); **14**: 687 (home territory size & permanency); **15**: 27 (competition effect on mortality; correction on **16**: 386); **18**: 125 (glycogen reserves); **20**: 845 (blood buffering capacity)

B 32: 32 (description, life-history & habits, B.C.)

S 144: 62 (B.C. distribution)

Trout, mountain Kamloops (*Salmo gairdneri whitehousei*) (*S. kamloops whitehousei*)

C 6: 393 (description as new subspecies)

B 32: 26 (description); **68**: 93, **68R**: 111 (description (under steelhead trout))

S 144: 62 (B.C. distribution)

Trout, rainbow (*Salmo gairdnerii*) (*see also* Trout, Kamloops; Trout, steelhead)

J 3: 169 (vertebral number); **5:** 448 (Cowichan R. system; feed); **6:** 245 (Cowichan R. system racial & migratory data); **12:** 499 (Skeena R. drainage system lakes); **13:** 764, **14:** 657 (B.C. distribution); **15:** 559 (toxicity of cyanide & detergents); **16:** 247, 269 (movements, predation & distribution, Paul L., B.C.), 321 (diet; glycogen reserves; fatigue resistance), 695 (homing, Loon L., B.C.); **18:** 125, **19:** 127 (glycogen reserves); **18:** 203 (food competition with shiners); **19:** 173, 201 (spawning run behaviour), 365, 409 (fatigue physiological effects), 619 (blood *p*H & mortality), 715 (feed effect on fecundity); **20:** 845 (blood buffering capacity); **21:** 1539 (anaesthesia effects on glycolysis)

B 32: 13, 16, 17, 18 (description (under steelhead trout & Kamloops trout)); **68:** 110, **68R:** 93 (description (under steelhead trout)); **72:** 90, **94:** 7 (Yukon); **84:** 14 (Cowichan R. system, B.C.); **155:** 106 (introduction to eastern provinces)

PRP 8: 11 (temperatures for hatchery propagation); **27:** 3 (classification); **67:** 23, **70:** 10, **74:** 6, 9, **78:** 6 (Skeena R. drainage system lakes); **76:** 85 (flesh freezing point); **80:** 52 (growth factor in salmon offal diet)

CCG 3: 19 (rearing industry status); **4:** 9 (farming in Germany)

NRB 9 (Nfld.)

NSB 6: 10 (Nfld. conservation)

S 85 (general description; B.C. distribution); **214** (spawning time weight loss); **215** (moon effect on angling); **230** (Paul L. production, B.C.); **249** (head length in different environments); **250** (morphology re stock increase); **263** (scale pattern; scale counting methods); **481** (Man.); **574** (P.E.I.); **700, 832** (fatty acids oxidation by muscle); **805** (multiple hemoglobins); **820** (phosphoglucomutases separation)

SS 405 (scale count re temperature); **434** (propagation); **459, 499** (spawning migration); **500** (origin & relations); **595** (species nomenclature); **731** (head lengths re environment); **1208:** 71 (full description, B.C.)

Trout, rock (*see* Greenling, rock; *also* Greenling, kelp; Greenling, whitespotted)

Trout, sea (*see* Char, arctic; Trout, brook; Weakfish)

Trout, speckled (*see* Trout, brook)

Trout, steelhead (*Salmo gairdnerii*) (steelhead salmon) (*see also* Trout, Kamloops; Trout, rainbow)

C 8: 271 (liver oil vitamin A)

J 3: 469 (marine: flesh pigments); **6:** 245 (anadromous: racial & migratory data); **10:** 548 (migration deflection experiments); **14:** 203 (anadromous: scale differences re coastal cutthroat trout); **16:** 505 (anadromous: P.E.I. record), 721 (growth computation); **17:** 221 (seasonal distribution, NE Pac.), 739 (two stocks, Capilano R., B.C.); **18:** 401 (adaptation to seawater), 679 (osteology; phylogeny); **20:** 969 (tagging effect on fingerling swimming); **21:** 255 (migration changes in glycogen & lactate), 857 (rigor mortis onset)

B 32: 13 (description; life history; habits; B.C.); **68:** 92, **68R:** 109 (full description); **72:** 90, **94:** 6 (Yukon); **84:** 14 (Cowichan R. system, B.C.)

PRP 16: 7 (liver, liver oil, vitamin A); **26:** 3 (culture efficiency in white vs. black ponds); **41:** 3 (canned smoked); **46:** 20 (Cowichan R. creel census); **53:** 9 (flesh analysis; nutritive value); **66:** 12, **70:** 10, **72:** 28 (Skeena R. drainage system lakes); **78:** 3 (scale reading); **109:** 9 (distribution, age & feed in NE Pac.)

S 85 (general description; B.C. distribution); **144:** 61 (B.C. distribution); **157** (scale development); **263** (scale pattern; scale counting methods); **453** (B.C. resource abundance, distribution & exploitation); **696** (muscle myogens separation); **733, 736** (gluconic acids & sugar metabolism); **749** (gastro-intestinal phosphatase); **851:** 27 (history & future prospects of fishery); **866** (tissue glycolytic enzymes)

SS 1208: 71 (full description, B.C.)

Trout, Yellowstone cutthroat (*Salmo clarkii lewisii*) (Montana black-spotted trout)

J 8: 125 (egg & sperm fertility after storage); **14:** 654 (B.C. distribution); **16:** 903 (morphological differences re *S. clarkii clarkii*)

B 32: 30 (description, life history & habits, B.C.), 35 (hybrid with Kamloops

trout); **68:** 90, **68R:** 112 (description (under coastal cutthroat trout))
S 144: 62 (B.C. distribution)
SS 1208: 69 (full description, B.C.)

Trout-perch (*Percopsis omiscomaycus*)
C 1911–14(II): 37 (Lake Huron); **8:** 43 (Hudson Bay)
J 11: 1, **15:** 214 (Heming L., Man.); **13:** 772, **14:** 657 (B.C. distribution); **18:** 141 (at Aklavik, N.W.T.)
B 72: 37 (Great Bear L.); **94:** 20 (arctic & subarctic)
SS 119 (James Bay); **1208:** 143 (full description, B.C.)

Trumpet fish (*see* Cornetfish)

Trunkfish (*Lactophrys trigonus*)
B 155: 413 (full description)

Truscott, Beryl
J 11: 355 (vitamin B_{12} from cod-liver solids); **18:** 501 (cod tropomyosin amino acids); **19:** 1095 (cod tropomyosin enzymic digestion); **21:** 1519 (oyster sterol metabolism), 1543 (scallop sterols)
PRA 61: 12 (cause of white spots on marinated herring)
S 428 (cod liver oil B_{12} activity for *Lactobacillus*); **770** (salmon steroid hormones metabolism); **856** (salmon plasma steroid hormones determination methods); **879** (scallop sterol isolation)

Trussel, Paul Chandos
SS 1135 (pollutants storage ground)

Tsuyuki, Hiroshi
J 16: 559 (spawning migratory sockeye salmon testicular androgen; correction on page 931); **17:** 565 (maturing sockeye tissues analysis); **18:** 637 (Pac. salmons muscle proteins); **20:** 101 (Salmonidae myogen patterns); **21:** 635 (fish pituitary removal technique)
S 476 (new adenyl-succinic acid derivative); **520** (spawning migratory sockeye biochemistry); **522** (salmon liver nucleotides); **621, 622, 647** (salmon inositol metabolism); **695, 696** (Pac. salmon muscle proteins); **806** (salmonidae multiple hemoglobins); **820** (phosphoglucomutases electrophoretic separation); **821** (casting polyacrylamide gels); **822** (eluting protein zones after electrophoresis); **884** (young Pac. salmons hemoglobin patterns)
SS 1348 (salmons, etc. muscle myogens); **1376** (multiple hemoglobins)

Tubes, clay
S 835 (possible origin, as found on sea-bottom)

Tubesnout (*Aulorhynchus flavidus*)
B 68: 126, **68R:** 355 (full description)
S 290 (W coast Vancouver Is.)

Tube-worms (*see Eudistylia;* Polychaeta)

Tuck, Leslie Mills
J 12: 781 (Ungava murre feeding habits)
SS 1268 (murres distribution, populations & habits)

Tullibees (*see Ciscoes*)

Tully, John Patrick
J 2: 477 (B.C. fresh oysters proximate analyses); **3:** 43 (Nootka Sound oceanography, B.C.), 93 (surface current charts from hydrodynamic data); **4:** 478 (seasonal variations in B.C. herring proximate analyses); **5:** 398, **18:** 1027 (Juan de Fuca Strait oceanography); **8:** 378 (W Canada Arctic oceanography); **11:** 853 (mean sea level anomaly, Seymour Narrows, B.C.); **14:** 241 (Strait of Georgia oceanography; correction on page 997); **17:** 61 (anomalous temperature increase in NE Pac.), 91 (estuarine analogy in subarctic Pac.); **21:** 941 (N Pac. ocean climatic regions)
B 83 (oceanographic predictions re Alberni Inlet pulpmill pollution)
PRP 19: 14 (small-scale oyster canning); **22:** 3 (Pac. oceanography); **23:** 18 (oyster as food); **25:** 21 (Kurosio current); **26:** 5 (weather & the ocean); **30:** 16 (ocean currents); **31:** 16 (a warmer summer); **32:** 13 (gradient ocean currents); **33:** 11 (seasons in the sea); **34:** 13 (reason for cold currents); **37:** 19 (B.C. herring chemical analyses); **46:** 14 (Cowichan Bay salmon mortality, B.C.); **76:** 66 (Alberni Inlet pollution); **85:** 88 (NE Pac. seasonal cycles); **90:** 16 (B.C. coastal seas climate);

92: 6 (B.C. coastal temperatures re tuna); **97**: 14 (Nanaimo Harbour pollution); **101**: 12 (salmon trolling catches re sea & air conditions); **107**: 28 (NE Pac. oceanography re salmon migration)

CPO 1959-4 (B.C. coastal approaches oceanography); **1960-19** (B.C. offshore surface seawater temperatures outlook); **1961-6** (NE Pac. & B.C. coastal oceanographic monitoring project)

S 172 (chlorinity conversion chart); **174** (oceanographic dynamic studies off B.C. coast); **177** (graphical corrections for deep-sea thermometers); **186** (oyster glycogen assay routine method); **189** (seawater colorimetric analysis simplified procedure); **191** (nomograph expression of seawater analyses as mg-atoms per litre); **241** (explosion during recovered silver nitrate crystallization); **344, 410, 585** (oceanography off B.C. coast: periodic reviews); **345** (freshwater behaviour on entering sea); **585A** (NE Pac. Canadian oceanography); **642** (estuarine embayments hydrodynamics); **807** (E subarctic Pac. seasonal temperature structure)

SS 665 (meteorology re NE Pac. gradient currents); **898, 1100** (pulpmill pollution prediction); **925** (Canadian oceanographic review, 1938–50); **931** (Alberni Harbour oceanographic model); **980, 1136** (Pac. oceanography); **1007, 1138, 1196, 1197** (general oceanography); **1047** (Bering & Chukchi Seas physical oceanography); **1053** (8th Pacific Science Congress); **1097, 1310** (recent oceanographic advances); **1098, 1137, 1197** (recent marine biology advances); **1099** (oceanographic vessel's storm ordeal); **1168** (seawater structure characteristics); **1169** (B.C. offshore surface waters); **1269** (the Northwest Passage); **1270** (Arctic Ocean); **1271** (estuarine embayments hydrography); **1305** (oceanography re Fraser R. salmon migration & survival); **1311** (subarctic Pac. estuarine model)

Tuna (general)
SS 1350 (off Nfld.)

Tuna (Japanese)
SS 1010 (tested for radiation when imported into B.C.)

Tuna, albacore (*see* Albacore: *Thunnus germo*)

Tuna, Allison's (*see* Tuna, yellowfin)

Tuna, Bermuda (*see* Tuna, blackfin)

Tuna, bigeye (*Thunnus obesus*) (bigeye) (*see also* Tuna, blackfin)
B 155: 289 (full description)
CSG 43 (description)

Tuna, blackfin (*Thunnus atlanticus*) (Atlantic blackfin tuna; Bermuda tuna; bigeye tuna; blackfin; blackfin bonito)
CSG 43 (description)

Tuna, bluefin (Atlantic) (*Thunnus thynnus*) (bluefin; great albacore; horse mackerel; tunny)
J 3: 102 (canned paste); **4**: 363 (flesh histidine); **16**: 824 (Miramichi estuary, N.B.); **18**: 495 (proximate composition); **20**: 1183 (effect of brine freezing & thawing on muscle constituents)
B 59, 89 (oils; *see* their indexes); **155**: 290 (full description)
PRA 5: 9 (canning); **29**: 17 (liver & viscera vitamin A)
CNG 64: 21 (productive capacity)
CSG 43 (description)
S 234 (Malpeque Bay, P.E.I.)
SS 134 (unutilized resource); **935** (fishery); **1086** (water temperature re fishery); **1350** (Nfld.)

Tuna, bluefin (Pacific) (*Thunnus thynnus orientalis*) (*Thunnus saliens*)
J 16: 383 (new record off B.C.)
B 68R: 225 (full description)
PRP 47: 12 (liver oil vitamin D)
S 851: 52 (B.C. fishery & prospects)

Tuna, little (*Euthynnus alletteratus*) (albacore; false albacore)
CSG 43 (description)

Tuna, longfin (*see* Albacore)

Tuna, skipjack (*Euthynnus pelamis*) (*Katsuwonus pelamis*; oceanic bonito; skipjack; striped bonito; striped tuna)
J 16: 384 (Juan de Fuca Strait)
B 68: 164, **68R**: 227 (full description, B.C.); **155**: 281 (full description, Atl. coast)

PRP 47: 12 (liver oil vitamin D); **56**: 16 (B.C. occurrence); **92**: 23 (ribose content)
CSG 43 (description of NW Atl.)
MSP 4 (glass-like crystals in canned)
S 851: 52 (B.C. fishery & prospects)

Tuna, striped (*see* Tuna, skipjack)

Tuna, yellowfin (*Thunnus albacares*) (*Neothunnus macropterus;* Allison's tuna or tunny; autumn albacore; yellowfin)
J 17: 33 (catch per unit of longline effort)
B 155: 288 (full description)
CSG 43 (description)

Tunicata (*see also* Appendicularians; Ascidiacea; Thaliacea)
S 587 (Minas Basin, N.S.); **616** (NE Pac.); **623** (arctic)

Tunny (*see* Tuna, bluefin (Atlantic))

Tunny, Allison's (*see* Tuna, yellowfin)

Turbellaria
C 1902–05: 91 (barndoor skate skin parasite)
SS 124 (parasitic)

Turbidity (*see also* Limnology; Oceanography; Transparency)
J 1: 322 (Bay of Fundy & Gulf of Maine); **11**: 362 (re Atl. salmon survival); **15**: 1403 (re trout movements); **18**: 979 (in B.C. mainland inlet waters)
S 189 (measurement in estuarial & marine waters); **827** (turbidimetry of ferric hydroxide activity product)

Turbot (Atlantic) (*see* Halibut, Greenland)

Turbot (Pacific) (*see* Flounder, arrowtooth)

Turkey (*see also* Poultry feed)
S 651 (reproductive capacity)

Tursiops truncatus (*see* Dolphin, Atlantic bottlenose)

Turtles, marine
S 372 (Nfld. region records); **735** (Pac. leatherback off B.C.)

Tusk (fish) (*see* Cusk)

Tusk (of animals) (*see* Narwhal; Sea lion; Teeth, age determination from; Walrus)

Twine for nets and lines (*see also* Fibres, synthetic)
PRP 25: 3, **49**: 19 (preservatives for)
SS 1209 (physical properties)

Tyee (*see* Salmon, chinook)

Tyrosine
J 4: 334, **6**: 53, **13**: 564 (reaction, as protein breakdown test)

U

Uda, Michitaka
J 20: 119 (subarctic Pac. oceanography)

Udvardy, Miklos Dezso Ferenc
J 11: 431 (Strait of Belle Isle appendicularians)

Ulcer
SS 1039 (in Quebec hatchery trout)

Ultrasonic waves
PRC 2: 36 (failure to attract lampreys)

Ultraviolet light (*see* Irradiation)

Ulva lactuca (*see* Sea-lettuce)

Ulva latissima (*see* Laver, green)

Ulvaria subbifurcata (*see* Shanny, radiated)

Umbra limi (*see* Mudminnow, central)

Umbra pygmaea (*see* Mudminnow, eastern)

Ungava Bay and region, Que.
J 9: 65 ("Calanus" Expedition), 83 (fishes); **11**: 98, **13**: 41 (list of Expedition stations), 507 (Polychaeta), 709 (Amphipoda); **12**: 487 (Chubb Crater region limnology & biology), 762 (barnacles), 781 (Akpatok Is. murre feeding habits), 858 (Copepoda), 899 (Echinodermata); **15**: **155** (physical oceanography), 219 (bearded seal)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière. **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews. **CVI, CVG**—Vancouver, **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

S 329 (economic problems); **469** (biological review); **482** (decapod crustacea); **545** (*Mytilus edulus*); **762** (*Sagitta* re primary production)
SS 911 (birds); **1113** (amphipod fauna)

Unicorn fish (*see* Filefish, scrawled)

Union Bay, B.C.
PRP 105: 11 (lemon sole: exploitation rate & "milkiness")

Union of Soviet Socialist Republics (Russia; U.S.S.R.)
S 720 (advances in ocean fishing)
SS 629 (fisheries biology & culture); **1112** (proposed damming of Bering Strait); **1380, 1401** (fishing in ICNAF area); **1381** (fishery)

Unit, Board Arctic (*see* Station, Board Arctic)

Unit, Board Technological, London, Ont. (moved to Winnipeg, Man., in 1966; *see also* the Annual Reports of the Board from 1956–57)
SS 1286, 1374 (activities)

Unit, Board Technological, St. John's, Nfld. (*see* the Annual Reports of the Board from 1955; *also* Station, Board Technological, Halifax)

Unloading fish from vessels (*see* Pump)

Unsaponifiables (of oils) (*see also* types of unsaponifiables, e.g. Alcohols; Carotenoids; Glyceryl ethers; Spermaceti; Squalene; Sterols; Vitamin A, Vitamin D; Waxes)
J 7: 389 (chromatographic analysis); **21:** 1035 (of scallop muscle fat)
B 37: 45, **59, 89** (in marine animal oils; see their indexes)
PRP 46: 12 (halibut liver oil); **53:** 7, **56:** 11, **59:** 20, **63:** 32 (dogfish liver oil); **55:** 9 (in sevengill shark liver oil); **58:** 13 (in shark, ratfish, sculpin & goosefish liver oils); **65:** 67 (in lingcod, sharks liver & sperm blubber oils); **71:** 5 (uses for); **75:** 48 (in whitefish body oil)
CVI 9, 12, 13 (in freshwater fishes oils)
SS 782 (determination in dogfish liver oil); **862** (chromatographic analysis)

Unsaturation (of oils, fats and fatty acids) (*see also* Acids, fatty; Hydrogenation; Oils and fats)
J 21: 247 (of marine lipids fatty acids)
B 59, 89 (re marine animal oils technology; *see* their indexes)
S 593 (liver oils re chick anti-hypercholesterolemia)

Upwelling of natural waters (*see also* Limnology; Oceanography)
J 12: 23 (B.C. offshore waters); **13:** 1 (Georgian Bay, Lake Huron)

Urea
C 1918–20: 125 (re Atl. dogfish flesh uses), 133 (in canned dogfish); **1:** 401 (in fresh & frozen Atl. dogfish)
J 1: 497 (secretion by elasmobranch stomach); **16:** 791 (in Pac. dogfish flesh); **17:** 811 (in stored gutted Pac. dogfish flesh)
PRP 94: 23 (content in ratfish); **110:** 13 (in dogfish flesh)
S 23 (colorimetry for); **119** (physiological significance); **542** (in teleost excreta)

Urine (*see* Excretion)

Urophycis chesteri (*see* Hake, longfin)

Urophycis chuss (*see* Hake, squirrel)

Urophycis regius (*see* Hake, spotted)

Urophycis tenuis (*see* Hake, white)

Urosalpinx cinerea (*see* Drill, eastern oyster)

U.S.S.R. (*see* Union of Soviet Socialist Republics)

Uterus (*see also* Physiology, reproduction; Reproduction)
J 20: 679 (skate tissue explant culture)

Utilization (*see* names of organisms, names of products; *also* Conservation; Fishery; Stock)

V

Vachon, Alexandre
C 1917–18: 295 (Passamaquoddy region hydrography)
SS 225 (starfish as fertilizer)

Vacuum in canned products (*see also* Canning; Headspace)
PRA 9: 3 (function in canning)
PRP 16: 3, **32**: 4 (salmon, re inspection); **19**: 14 (oysters); **52**: 7 (re pressure cooling of cans), 19 (herring)
CFI 3 (function in canned seafoods)
CHO 9 (exhaustion to produce, in canned lobster)
SS 531 (function)

Vaillancourt, Gilbert
PRA 72: 19 (salt cod pickle constituents)
S 531, 589 (horizontal paper amino-acid chromatography)
SS 1272 (amino acids re fish flavour)

Vaisey, Edgar Byron
J 11: 901 (*Sporendonema epizoum* osmophilism); **13**: 559 (nitrite-treated Atl. cod fillets)
PRA 58: 32, **60**: 4 ("dun" mould control on salt fish)
S 456 (non-enzymic trimethylamine oxide reduction)

Vallentyne, John Rueben Way
J 14: 33 (chemistry of organic matter in soils, sewage, lakes, oceans; correction on page 997)

Valleyfield, Nfld.
B 141: 23 (longlining experiments for cod)
PRA 63: 19 (longlining experiment)

Value (*see* Marketing)

Van Horne, Adaline
C 1911–14(I): 47 (fleshy fungi, St. Andrews, N.B.)
SS 103 (rare fungi, St. Andrews)

Van Horne, Mary
C 1911–14(I): 47 (fleshy fungi, St. Andrews, N.B.)

Van Klaveren, Frederick Wilhelm
PRA 71: 3 (comparison of salt cod products); **72**: 19 (salt cod pickle constituents)
S 531, 589 (horizontal paper amino-acid chromatography)
SS 1272 (amino acids re fish flavour)

Vanadium compounds
J 16: 7 (in Atl. coast seawater)

Vancouver Island, B.C. (The following is not an exhaustive listing; *see also* British Columbia; Departure Bay; Lighthouse and lightship oceanographic stations, B.C. coast; Oceanography, Pacific (NE coastal waters) *and* names of marine bodies of water adjacent to Vancouver Island; *also* names of separate localities, lakes and rivers *and* names of fishes and other organisms pertaining to Vancouver Island)
C 1914–15: 119 (possible lobster planting areas); **1**: 143, **3**: 47 (Bryozoa); **1**: 219 (Hydromedusae); **6**: 23 (Cumacea), 65 (annelids), 397 (Ostracoda); **7**: 221 (Cestoda); **8**: 243 (freshwater amphipods)
J 7: 403 (herring); **9**: 16 (Ostracoda); **12**: 1 (offshore oceanography); **15**: 1103 pink & chum salmon reproduction); **16**: 761 (new *Emerita* hermit crab); **19**: 45 (temperature & salinity of approaches); **20**: 939 (seawater structure)
B 14, 15, 26, 27, 31, 66 (salmon tagging); **17** (waterfowl predation on herring); **30** (Dungeness crab); **39** (pollution by pilchard reduction plant); **47** (herring locations); **65** (chinook & coho salmon feed); **84** (Cowichan R. game fish)
PRP 4: 11 (chinook salmon tagging); **32**: 13, **34**: 13, **108**: 7 (oceanography); **63**: 35 (lemon sole age & growth); **67**: 32 (herring growth); **68**: 51 (lemon sole tag returns); **73**: 65, **78**: 20; **80**: 57 (herring tagging, spawning & larvae survey); **85**: 80 (coho salmon growth); **91**: 28 (northern coho run); **93**: 17 (salmon stream survey); **95**: 35 (dogfish feed), 47 (immature chinook & coho salmon); **98**: 17, **99**: 29, **100**: 16 (brill); **107**: 19 (lingcod tagging); **111**: 9 (bird predation on herring spawn), 20 (trawled mink feed landings); **112**: 7 (coho feed)
S 11 (new heliozoon); **12, 30, 49** (nudibranchiate Mollusca); **160** (fur seal feed); **285, 327, 343, 397** (herring populations); **322** (troll-caught salmon); **860**: 19 (review of oceanography)
SS 187 (notes on a fish collection)

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Vandenheuvel, Franz Aimé
J 9: 129 (cod-liver protein vitamin B_{12})
PRA 48: 4, **49**: 3 (cod liver processing methods); **67**: 29 (protein concentrate from cod & haddock offal); **68**: 17 (liver preservation procedure)
S 330 (semimicro hydrogenation apparatus); **331, 450** (aliphatic acid partition chromatography); **349** (fatty acid unsaturation re refractivity); **350** (alkali isomerization procedure); **429** (platinum oxide hydrogenation catalyst); **449, 458, 463** (fatty esters hydrogenation kinetics); **479** (methyl esters from marine oils); **629** (ester decomposition during gas chromatography); **645** (continuous-recording differential refractometer); **652** (long-chain dicarboxylic acids preparation); **662** (unsaturated fatty acids ozonolysis); **687** (glyceride methanolysis pilot plant); **688** glycerol recovery from methanolysis); **705, 800** (preparative-scale gas–liquid chromatography apparatus); **797** (improved liquid elution column system)
SS 926 (fatty acids synthesis); **981** (Maritimes cod liver oil industry)
Patent—Canada No. 484,092 (treatment of fish livers)

Vanstone, William Edward
J 18: 393 (coho salmon plasma proteins), 859 (sockeye salmon serum constituents)
S 884 (young Pac. salmons haemoglobin patterns)

Variation, morphological (*see also* Morphology; Morphometry; Size; *also* other cognate subjects)
J 6: 30 (in pigmy poacher), 217 (pink salmon fry), 245 (*Salmo gairdnerii* racial characteristics), 392 (pink salmon gill raker & pyloric caeca counts); **7**: 403 (Pac. herring vertebrae number); **8**: 347 (maskinonge); **9**: 169 (anadromous & freshwater brook trout); **20**: 27 (geographic, in ninespine stickleback); **21**: 1129 (geographic, in Greenland halibut)
S 870 (harp seal cranium, re populations distribution)
SS 164 (planktonic copepods); **237** (marine algae); **246** (fourspine stickleback); **512** (re fishes taxonomy); **539** (Pac. salmons); **1076** (Canadian maskinonge)

Variations, seasonal, in composition (*see also* Composition, chemical; *also* under biology and products of different organisms)
J 2: 439 (canned sockeye & pink salmon); **4**: 312 (dogfish liver oils vitamins A & D)
B 59, 89 (marine animals oil content & oil constituents; *see* their indexes)
PRA 34: 17 (fatness in sardine herring)
PRP 19: 5, **23**: 11, **39**: 4 (pilchard oil vitamin D content); **19**: 20 (canned pilchard); **31**: 3, **34**: 3 (dogfish liver oil vitamin A content); **35**: 7 (herring oil vitamins A & D); **37**: 19 (herring); **52**: 3 (canned herring)

Varnish from fish oils (*see also* Paint from fish oils)
B 59, 89 (*see* their indexes)
CVI 1 (varnish base from pilchard oil)

Vatcher, Doris Ruth
S 450 (aliphatic acids partition chromatography)

Vaughan, Elizabeth
S 237 (pink salmon upstream migration)

Vavasour, Gerald Ralph
J 12: 682 (Nfld. pulpmill pollution; correction on **14**: 997)

Velar apparatus
S 36 (of Pac. lamprey)

Velella (*see* Jellyfish)

Venerupis japonica (*see* Clam, Manila)

Venus mercenaria (*see* Quahaug)

Vernon, Edwin Herman
J 14: 203 (cutthroat & steelhead trout scale characteristics), 573 (morphometry of 3 kokanee races)
S 862 (pink salmon migration & exploitation re Fraser R. Convention Area)

Verrill, A. E.
SS 104 (Pac. coast shallow-water starfishes)

Vertebrae (*see also* Vertebrae, age determination from)
J 3: 114, **5**: 11, 347, 474, **7**: 403 (B.C. herring); **3**: 169 (*Salmo*), 417, **15**: 275 (capelin); **5**: 105 (Atl. cod); **13**: 449

(Nfld. herring), 843 (arctic char, Labrador); **16**: 903 cutthroat trout); **20**: 1159 (American plaice)

B 111: 165 (number re sea temperature, in Atl. herring)

PRA 25: 3 (number, in cod)

PRP 12: 12, **24**: 15, **30**: 3, **42**: 12 (B.C. herring); **24**: 15 (pilchard)

NRB 14: 63 (Atl. cod); **17**: 109 (Atl. capelin)

S 120, 183 (pilchard); **146, 190** (B.C. herring); **610** (number, re haddock stocks); **729** (redfish); **791** (NW Atl. cod)

Vertebrae, age determination from

J 12: 51 (Pac. albacore)

B 2: 20 (lumpfish); **3**: 15 (angler)

PRP 73: 53 (exhibit); **99**: 14, **105**: 22 (lingcod)

CNG 20: 3 (B.C. albacore)

Vessels, fishing (*see* Gear; Holds; Icing; Sanitation; Sea water, refrigerated; *also* other cognate subjects)

Vessels, research

C 1906–10: 9 (early, at St. Andrews Biological Station, N.B.)

J 15: 766, 770, 773 (Biological Station, Nanaimo, B.C.), 1129, 1132, 1137, 1146, 1149, 1153, 1453 (Biological Station, St. Andrews, N.B.)

B 111 (for Atl. Herring Investigation Project); **134**: 20 (Canadian, for oceanography)

PRA 64: 16 (North America circumnavigation); **69**: 18 (in E Arctic)

PRC 2: 3 (Great Slave Lake), 5 (Lake Erie)

PRP 71: 4 (Biological Station, Nanaimo); **92**: 9 (Biological Station, Winnipeg)

SS 881, 982 ("Calanus"); **932** (C.N.A.V. "Sackville" for oceanography); **1099** (H.M.C.S. "Cedarwood" ordeal in storm); **1241, 1329, 1362** ("A.T. Cameron" cruises); **1318, 1353** (description & launching of "G.B. Reed"); **1356** ("Velella" research barge, Nanaimo Station)

Viability (*see also* cognate subjects, e.g. Eggs; Hatcheries; Lethal limits; Sperm; *also* names of organisms)

J 6: 252 (teleostean ova after dropping); **8**: 125 (salmonid eggs & sperm after freezing)

SS 518 (tapeworms in artificial media)

Vibrio (bacteria)

PRP 96: 11 (indigenous to marine forms)

Victoria, Lake (East Africa)

J 20: 195 (estimation of *Tilapia* mortality rates)

Victoria Island, N.W.T.

J 19: 1105 (Greiner L. relict fauna)

Vincent, Swale

SS 109 (dogfish enlarged thyroid)

Viperfish (***Chauliodus sloani***)

B 155: 136 (full description)

S 226 (off N.S.)

Viperfish, fanged (***Chauliodus macouni***)

J 11: 501 (first B.C. record); **19**: 307 (NE Pac. distribution)

B 68: 108, **68R**: 138 (full description)

SS 904, 1014 (inshore B.C. records)

Virtual population

B 119: 22, 167, 169 (Derzhavin & Fry methods)

Viscera (*see also* Meals; Oils and fats: fish liver; Oils and fats: fish offal; Oils and fats: fish viscera)

J 7: 94 (thiaminase in), 563 (amino acid composition of organs); **8**: 117 (for salmonid hatchery fry rations); **13**: 869 (animal feed from cod & haddock); **16**: 421 (nucleic acids of sockeye salmon); **17**: 913 (collagen of Pac. herring); **18**: 85 (meal, as dietary protein source)

PRA 29: 17 (oil content of swordfish & tuna)

PRP 33: 8 (yield from halibut); **35**: 13 (preservation & processing of halibut & cod); **36**: 7 (preservation of halibut), 22, **38**: 15 (yield from Pac. cods); **44**: 4, **45**: 21 (processing); **48**: 9, **82**: 20 (yields from halibut & salmon; value to fishermen); **102**: 4 (indigenous bacteria re spoilage)

CVI 9, 12, 13 (proportions, & analyses of, in freshwater fishes); **16** (by-products from salmon)

S 310 (vitamin B_{12} in)
SS 1204 (meal from groundfish, for stock feed)

Viscera oil (*see* Oils and fats: fish viscera; Vitamin A; Vitamin D)

Viscosity
J 16: 561, 685 (whale & herring solubles)
B 59, 89 (re marine animal oils technology; *see* their indexes)
CVG 21 (measurement for herring solubles)
SS 751 (Atl. cod flesh extracts)

Vision; visual response (*see* Eye; Light, reactions to)

Visweswariah, Krishnamurthy
J 16: 1 (antibiotic for fish quality in India); **17**: 475 (iced India shrimp spoilage)

Vitamin A (*see also* Vitamins A+D)
C 6: 355 (pilchard oil biological assay); **7**: 405 (lingcod liver oil & biological assay methods); **8**: 265 (Pac. salmon liver oil)
J 4: 174, **6**: 113 (separation from oils by soap adsorption); **7**: 389 (separation from oils by adsorption chromatography); **11**: 357 (Atl. cod liver); **18**: 377 (hypocholesterolemic activity)
B 37: 93, **59, 89** (content of, and recovery from many types of marine livers & oils; *see* their indexes)
PRA 29: 17 (swordfish & tuna liver & viscera oils); **34**: 19 (in alkali-refined cod liver oil); **37**: 9 (seal liver oil); **35**: 14 (Atl. dogfish liver oil)
PRP 12: 3, **26**: 17, **65**: 67 (in various B.C. fish liver oils); **16**: 7 (B.C. salmon & flounder liver oils); **31**: 3, **34**: 3, **50**: 10, **63**: 32, **66**: 16, **73**: 48, 57, **76**: 63, **77**: 116 (B.C. dogfish liver oil); **33**: 7, **36**: 14 (concentration from oils by soap adsorption); **36**: 7, **73**: 48 (effect of liver preservation treatments on potency); **36**: 22 (B.C. cods liver & viscera oils); **44**: 4 (research progress); **44**: 4, **45**: 21, **54**: 15, **76**: 63, **77**: 116, **100**: 5, **103**: 11 (stability in oils); **46**: 12, **49**: 13, **50**: 8, **53**: 7 (concentration from B.C. fish oils by column adsorption); **50**: 4 (production factors), 8 (alcohol form of), 12, **82**: 20 (assay methods); **54**: 4 (hake liver oil); **55**: 9 (sevengill shark liver); **57**: 11 (content in smoked sablefish, kippered herring, lingcod fillets, blueback salmon, clam nectar); **61**: 6, **68**: 43 (B.C. flatfishes liver & viscera); **61**: 12 (mackerel shark liver); **65**: 67, **79**: 40, **83**: 28 (whale liver oils; correction on **84**: 50); **69**: 74, **71**: 12 (brill livers); **72**: 41 (arrowtooth flounder liver); **75**: 48 (whitefish body & organs); **82**: 20 (Canadian liver oil values & assay methods)
CVI 6 (production factors from B.C. dogfish & halibut livers); **8** (& oil content of B.C. flatfishes livers); **9, 12, 13** (in freshwater fishes body, liver & viscera oils); **10**: 4 (whale liver oils)
NRB 15 (Atl. dogfish liver oil)
NSB 3: 20 (Atl. cod liver oil); **5**: 6 (Atl. dogfish liver oil)
S 55 (B.C. dogfish liver); **265** (reagent dispenser for assay); **617, 691** (effect on chick cholesterol metabolism); **809** (effect of excess on hen egg production)
SS 685 (assay in tissues of low oil content)

Vitamin D (*see also* Cholesterol; Sterols; Vitamins A+D)
J 6: 103 (relative activities of free vs. esterified); **21**: 1035 (precursors in scallop muscle)
B 37: 93, **59, 89** (content of, and recovery from many types of marine animal livers & oils; *see* their indexes)
PRP 13: 13 (in oil of canned salmon); **19**: 5, **38**: 7, **39**: 3 (seasonal variations in pilchard oil); **22**: 15 (chum salmon egg oil); **38**: 7 (pilchard & herring oils); **41**: 17 (re bones in canned salmon as adjunct to antirachitic uses); **46**: 18 (assay methods); **47**: 12 (potencies of free vs. combined, in several B.C. fish oils); **71**: 9 (cholesterol from fish oils as commercial precursor)
CVI 9 (in lake herring & cisco oils)
NSB 3: 37 (Atl. cod liver oil)
S 86 (B.C. dogfish liver oil); **97** (pilchard oil); **162** (re canned salmon antirachitic value)
SS 362 (B.C. dogfish liver)

Vitamins A+D (*see also* Vitamin A; Vitamin D)
J 2: 431 (B.C. canned salmon oils); **4**: 312 (factors affecting dogfish liver oil potencies), 396 (halibut liver & intestine

oils), 405 (Pac. cod liver & intestine oils), 472 (Pac. rockfish, sablefish & lingcod liver & intestine oils); **5**: 428 (B.C. herring, pilchard & salmon, also tullibee: body, liver and intestine oils); **14**: 59 (in seston & sediments)

B 37: 93, **59, 89** (content of, and recovery from many types of marine animal livers & oils; *see* their indexes)

PRP 11: 22 (in oil of canned salmon); **19**: 10, **20**: 8, 24 (feeding tests with children); **22**: 8 (in fish livers of low oil content); **22**: 24 (blended pilchard & dogfish pharmaceutical oil); **23**: 11, **39**: 3 (pilchard oil); **33**: 8 (in body & liver oils of pilchard, herring & dogfish, also in various organs of halibut); **35**: 7 (herring body oil), 12, **58**: 3 (B.C. shark liver oils); **35**: 13 (B.C. halibut & sablefish viscera oils); **36**: 10 (B.C. hair seal & sea lion blubber oil); **38**: 15 (Pac. cod liver & viscera); **41**: 8 (red, white & pink chinook salmon flesh); **46**: 12 (concentration from liver oil unsaponifiables); **48**: 9 (B.C. halibut liver); **51**: 18 (whale & beluga livers); **53**: 9 (chart of content in various fishery products)

CVI 4 (pilchard oil); **9** (lake herring & cisco); **17** (in various sea foods)

S 299 (sources in fishes; separation; uses; economics)

SS 530 (in blended dogfish-liver & pilchard pharmaceutical oil); **659** (halibut & sablefish viscera oils); **686, 726** (as fish industry by-products)

Vitamin B group (*see also* Thiaminase)

J 7: 74 (re fish flesh biological feed value); **9**: 129 (B_{12} activity, stability & assay, re Atl. cod liver protein), 164 (B_{12} type in marine invertebrates); **10**: 64 (B_{12} in B.C. herring meals, etc.); **11**: 355 (B_{12} in Atl. cod liver & concentrates), 529 (diet destructive to thiamin); **12**: 643 (in fish & mammalian liver); **13**: 875 (in dried fish viscera meal); **14**: 59 (in seston, waters, sediments, etc.); **16**: 685 (B_{12} in condensed herring, etc. solubles); **20**: 229 (in B.C. whole herring meal); **21**: 1489 (in Atl. fish protein concentrates)

PRA 49: 5, **54**: 3 (B_{12} in cod liver meal); **55**: 11 (in cod & haddock); **65**: 24 (in acid ensilage from offal)

PRP 22: 18 (in oysters); **53**: 9 (in various fishery products); **77**: 97, **79**: 37, **85**: 83, **87**: 42, **90**: 14, **101**: 27, **103**: 18, **111**: 26 (B_{12} in herring or whale stickwater, meals & condensed solubles); **80**: 47 (in salmon offal for hatchery feed); **90**: 10, **92**: 10, **113**: 3 (in herring or whale stickwater, meals & condensed solubles); **95**: 45 (B_{12} in marine invertebrates & seaweeds)

CVI 17 (in various marine animals)

CVG 24 (in Atl. & Pac. herring meals); **26** (in B.C. whole herring meal)

S 310 (in various fishery products); **325** (microbiological formation of B_{12} from stickwaters); **335** (in salmon kidney & herring meal); **373** (as herring meal supplement); **428** (separation & assay of B group in cod liver); **439** (amounts in cod & haddock fillets); **467** (synthesis by clam bacteria); **719** (affected by irradiation preservation of products); **774** (biotin microbiological assay method)

SS 949 (microbiological production in fish wastes); **959** (drying temperature effect on herring meal folic acid); **978** (B_{12} microbiological assay); **1330, 1358, 1365, 1366** (coenzyme B_{12})

Vitamin C (*see* Ascorbic acid)

Vitamin K

J 20: 229 (in B.C. whole herring meal)

CVG 26 (in B.C. whole herring meal)

Vladykov, Vadim Dmitrovich

C 8: 13 (Hudson Bay region fishes), 409 (young haddock, N.S.)

J 11: 535 (haddock feeding re sexual cycle; correction on **14**: 997); **11**: 904 (NE America chars taxonomy); **12**: 754 (comparison of Atl. & Gulf of Mexico sturgeons); **13**: 799 (wild speckled trout fecundity in Que. lakes); **15**: 47 (*Lampetra ayresii*: redescription of); **17**: 267 (lamprey ammocoetes description); **18**: 1125 (lamprey infraoral laminae); **21**: 1523 (American eel breeding area)

B 136 (Pac. salmons osteology)
PRA 7: 10 (sea temperature re haddock fishing); **14:** 3 (haddock races); **15:** 10 (haddock feeding during spawning)
S 130 (N America salmonids distribution & relationships); **154** (Atl. rays egg capsules); **155** (anadromous fishes on N.S. banks); **610** (NW Atl. haddock stocks definition)
SS 463 (Hudson Bay fisheries possibilities); **512** (fishes environmental & taxonomic characters); **513** (N Pac. fishes in Hudson Bay); **514** (cyprinid teeth re geographic distribution); **571, 575** (N.S. marine fishes); **572** (2 new snake-blenny subspecies); **573, 574** ("three-eyed" haddock explained); **576** (list of fishes from Trois Pistoles, Que.); **601** (new *Lycodes* species); **619** (biochemical recognition of haddock from cod fillets); **666** (Atl. shad populations)

Volatile acids; Volatile bases (*see* Acids, volatile; Bases, volatile)

Volsella modiolis (*see* Mussel, horse)

Volume
PRP 32: 17, **36:** 16 (bulk measurement factors for fish oils)
SS 635 (of fish: simple measurement method); **698, 728** (bulk measurement factors for fish oils, etc.)

Vomer setapinnis (*see* Moonfish, Atlantic)

Vrooman, Andrew Merrill
J 21: 691 (Pac. sardine subpopulations)

W

Waddell, Alfred Ernest John
J 18: 501 (cod tropomyosin amino acids); **19:** 1095 (cod tropomyosin enzymic digestion); **20:** 729 (bacteria amino acid composition re productivity)

Wahleach Creek and Lake, B.C. (*see* Jones Creek and Lake)

Wailes, George Herbert
C 2: 507 (B.C. Rhizopoda & Heliozoa), 519 (B.C. Desmideae), 531 (B.C. Tintinnidae); **7:** 213 (new protozoan, B.C.), 245 (pilchard feed)
J 1: 477 (B.C. herring feed)
PRP 11: 24 (pilchard feed)
PF 1a (B.C. Lobosa); **1b** (B.C. Reticulosa); **1c** (B.C. Heliozoa); **1d** (B.C. Radiolaria); **1e** (B.C. Magistophora); **1f** (B.C. Ciliata); **1g** (B.C. Suctoria)
S 28 (new or rare B.C. Protozoa); **76:** 1 (new & other B.C. Dinoflagellata), 9 (new & other B.C. Protozoa), 15 (B.C. crabs & their young); **88** (B.C. marine Ciliata); **98** (B.C. marine zooplankton)
SS 315 (B.C. Rhizopoda & Heliozoa); **316** (sea harvest); **346** (B.C. alpine Rhizopoda & Peridiniidae); **347, 349** (ocean plant life); **348** (starfishes); **350** (*Sarcia mirabilis* natural history); **351, 387** (Strait of Georgia Tintinnidae); **352** (sea lions); **353** (B.C. algae); **386, 391, 413, 465, 467** (B.C. lacustrine Algae & Protozoa); **388, 412, 414, 443** (B.C. Amphipoda); **389** (B.C. salmons identification); **390, 411** (Mundy L. ecology, B.C.); **415, 442** (Sproat L. ecology, B.C.); **430** (pilchard feed); **464, 516** (Alaska freshwater Algae, Protozoa, etc.); **466** (index to natural history illustrations & species in selected articles); **468** (W coast Vancouver Is. plankton); **515** (B.C. marine Rotatoria); **517, 578** (N America freshwater dinoflagellates); **577** (N America snow & ice flora & fauna); **579** (new B.C. Copepoda records)
PRP 66: 3 (obituary of)

Wainai, Tohru
J 21: 1035, 1543 (scallop sterols)
S 879 (scallop sterol isolation)

Walden, Robert Gould
J 14: 931 (transponding drift buoys)

Waldichuk, Michael
J 11: 501 (Strait of Georgia deep-water characteristics re bathypelagic fishes); **13:** 7 (basic productivity of Trevor Channel & Alberni Inlet, B.C.); **14:** 321 (Strait of Georgia oceanography; correction on page 998); **15:** 1065 (Strait of Georgia drift bottle observations); **18:** 287 (decay of hexachlorocyclohexane in seawater); **19:** 1163 (amphipods in low-oxygen marine waters); **21:** 1289 (kraft-mill effluent re pollution)

PRP 93: 26, **94**: 19, **95**: 59, **96**: 6, **104**: 30, **108**: 3 (Strait of Georgia oceanography); **97**: 14 (Nanaimo Harbour sewage pollution); **101**: 23 (Alberni Harbour pulpmill pollution; correction on **102**: 2); **102**: 6 (effluent disposal from proposed pulpmill); **110**: 6 (summer oceanography, Osborn Bay, B.C.); **112**: 10 (shellfish toxicity re Strait of Georgia weather); **114**: 13 (pollution in B.C. coastal waters)
CNG 57 (pulpmill pollution on B.C. coast); **59** (sea sedimentation of radioactive wastes)
S 431 (Alberni Harbour pulpmill pollution); **510, 743** (reports on B.C. marine pollution studies); **627, 737** (pulpmill pollution effects on marine environment); **630** (radioactive wastes marine disposal); **643** (oceanographic characteristics of a polluted inlet); **734** (continuous liquid–liquid extractor for seawater trace compounds)
SS 1054 (Nanaimo Harbour pollution studies); **1349** (radioactive wastes marine disposal); **1377** (test for pulpmill effluents)

Waldie, Robert Jackson
PRP 83: 42 (Strait of Georgia fresh water); **84**: 59 (unusual NE Pac. oceanographic condition)

Walford line
J 16: 740 (chinook salmon growth representation)
B 119: 194, 221 (fish growth representation)

Walker, Edmund Murton
C 1911–14(II): 53 (Odonata of Georgian Bay region, Ont.)
S 200 (Odonata of Cultus L., B.C.)
SS 58, 81, 105, 106, 151 (Canadian Odonata nymphs); **82** (mutual adaptation in *Argia*)

Walker, Robert Edward
B 89 (Foreword)

Walker, S. J.
C 6: 472 (fishing survey at Churchill, Man.)

Wallace, David Henry
SS 666 (Atl. shad populations)

Wallace, Norbert A.
S 1 (Bay of Fundy Isopoda)

Walleye (*Stizostedion vitreum vitreum*) (doré; yellow pickerel; yellow pikeperch)
C 1911–14(II): 45 (Lake Huron); **1**: 437 (Athabaska R. delta); **3**: 235 (copepod gill parasite of); **8**: 25 (Hudson Bay)
J 8: 207 (Great Slave L.); **13**: 776, **14**: 657 (B.C. distribution); **15**: 214 (Heming L. Man.), 607 (preferred temperature & depth); **16**: 131 (Lake Winnipeg commercial fishery study), 147 (associations in Ont. streams)
B 72: 41 (Great Bear L.), 79 (Lake Athabaska; parasites); **81** (Lake Manitoba; characteristics); **94**: 20 (Canadian Arctic & Subarctic); **107** (in Great Slave L. fishery); **126**: 60 (storage in refrigerated seawater)
PRP 75: 35 (smoking of)
CCG 3: 12 (record size in Great Slave L.); **4**: 10 (sausage)
CNG 64: 63 (productive capacity)
CVI 9, 12, 13 (constituents; proximate analysis; vitamin A)
S 481 (Man.)
SS 117, 119 (James Bay region); 358 (Prairie Provinces industry); **827** (reproduction re cold weather); **855** (growth rate, Lake Manitoba); **946** (experimental rearing); **1208**: 147 (full description, B.C.)

Wallis, John Braithwaite
C 4: 221 (Jasper Park lakes beetles)

Walrus (Pacific) (*Odobenus divergens*)
J 11: 279 (parasite of)
B 85: 6 (description; distribution)
S 367: 87 (mention of information on)

Walrus, Atlantic (*Odobenus rosmarus*)
B 85: 3, **137**: 25 (description; distribution)
CAG 2 (distribution; feed; growth; hunting; mortality); **3** (catch record instructions for Eskimos)
CNG 64: 57 (productive capacity)
CSG 18 (description)

S 367: 87 (mention of information on); **469** (tagging)
SS 119 (James Bay); **1069** (status)

Wapun Lake, Man.
J 15: 203 (limnology)

Warbler, worm-eating (*Helmitheros vermivorus*)
SS 921 (at St. Andrews, N.B.)

Warburton, Frederick Eyton
PRA 68: 3, **69:** 7 (effect & control of boring sponge on oysters)
S 496 (removing intact bivalves from shell); **513** (*Cliona* sponge species validity); **515** (*Cliona* fused larvae reproduction); **538** (*Cliona* sponge boring action)

Ward, F. J.
SS 1399 (Adams R. sockeye salmon cyclic dominance)

Wardle, Robert Arnold
C 7: 221, **8:** 77 (Cestoda of B.C. coastal fishes), 377 (Cestoda of Hudson Bay drainage system)
B 45 (fish tapeworms)
SS 444 (cestode study technique); **469** (Cestodaria & Cestoda of Canadian animals); **518** (tapeworm viability in artificial media); **631** (*Diphyllobothrium* taxonomy)

Warren, Arthur Emerson
J 2: 89 (sea mussel ecology, N.B.)

Warren, Richard Antony John
S 606 (lingcod muscle phosphomonoesterases)

"Washing" (of berried lobsters)
NRB 10, 11: 29 (legal aspects, Nfld.)
NSB 15: 35 (Nfld.)

Washing of fish and shellfish (*see also* Quality; Sanitation)
J 13: 23 (recommendations re product quality); **20:** 1231 (factors affecting efficiency)
B 100, 103 (on trawlers); **112** (salt cod by machine)
PRA 35: 20 (fish for filleting); **55:** 17, **56:** 5 (vs. not washing, for fish on fishing vessels at sea); **56:** 10 (equipment tests on fillets); **62:** 38 (automatic salt-fish washer)
PRP 73: 58, **78:** 16 (mechanized drum for); **81:** 80 (effect of mechanical, on keeping quality)
CHO 32 (equipment for clams)
Patent—Canada No. 563,417 (fish-washing machine)

Washington, State of, U.S.A. (*see also* Juan de Fuca Strait)
B 66, 74 (pink salmon); **68, 68R** (included in range of most B.C. marine fishes)

Waskesiu Lake, Sask.
J 7: 190 (pike)
SS 438 (pike)

Wastes, radioactive
S 630 (containment for disposal of)

Wastes recovery, composition and utilization (*see also* By-products; Glue; Meals; Offal; Pollution; Protein concentrate; Stickwater)
B 25 (haddock)
PRP 55: 18, **71:** 5, **75:** 48 (scales); **61:** 22 (swim bladder); **63:** 45, **71:** 5, **73:** 58, **75:** 48 (skin); **69:** 66, **71:** 5, **80:** 47 (enzymes); **69:** 66, **71:** 5, **75:** 43, 48, **80:** 47 (flesh proteins); **70:** 18, **71:** 5 (gall bladder & bile); **71:** 5 (review); **71:** 5, **89:** 82 (shell); **71:** 5, **80:** 47, 52 (glands); **73:** 58, **75:** 48 (heads); **73:** 58, **75:** 48. **76:** 71, 78 (filleting); **73:** 58, **75:** 48 (bone); **75:** 48, **80:** 47 (viscera & gonads); **88:** 66, **93:** 18 (freshwater fishes)
CCG 5: 10 (proximate analysis, freshwater fishes)
CVI 9, 12, 13 (proportion & proximate analyses, freshwater fishes)
SS 949 (vitamin B_{12} formation from)

Watanabe, Muneshige
SS 667 (pilchard sex ratios); **722** (Fraser R. sockeye salmon propagation)

Water, sea (*see* Sea water; Sea water, refrigerated; *also* Oceanography)

Water analysis (for methods, *see* Analysis, chemical; for results, *see* Limnology; Oceanography; Pollution; Toxicity)

Water bottles for sampling waters (*see* Sampling devices and methods; *also* Limnology; Oceanography)

Water content (*see also* Cod, salt; Composition, chemical; Dehydration;

Drying; Herring, salt; Moisture determination; Salt fish; *also* other cognate subjects)
J 16: 235 (changes in spawning migratory sockeye salmon), 697 (seasonal variations in B.C. herring); **17**: 113 (changes in organs of maturing sockeye; correction on page 943), 323 (changes in tissues & organs of maturing coho salmon)
PRA 60: 15 (salt cod)
CHN 16 (variations re oil content, etc.)
NSB 1: 31 (of dried codfish)

Water determination in products (*see* Moisture determination; Water content)

Water fleas (*see* Cladocera)

Water height; Water level (*see also* Flow; Tide; Limnology)
J 11: 853 (mean sea level anomaly, Seymour Narrows, B.C.); **15**: 1103 (re salmon spawning success), 1403 (re trout movements)

Water supply for fish processing (*see also* Ice)
J 7: 55 (sterilizing seawater)
PRA 36: 14, **40**: 9, **66**: 13 (sanitation & sterilization)
SS 808 (sterilizing)

Water weed (*Potamogeton*)
PRP 74: 9 (in lakes)

Waters, natural (*see also* Currents; Diluiton; Flow; Hydrodynamics; Ice; Lakes; Limnology; Oceanography; Pollution; Sea water; Tide; Turbidity; Water height; *also* associated subjects, e.g. Storms; Waves)
J 16: 381 (conductivity measurement; correction on page 930); **17**: 583 (role of conductivity in lamprey electrical impulses), 601 (dechlorination for aquarium use)

Watling, Harold
J 21: 373 (grayling olfactory apparatus)

Watson, Dennis Wallace
J 4: 219 (*p*H effect on acid-resistant bacteria), 252 (bacterial reduction of trimethylamine oxide), 267 (trimethylamine role in *Achromobacter* respiration)
PRA 18: 3 (marinated herring preparation)

Watson, Edmund Evelyn
J 2: 141 (Bay of Fundy tidal mixing & currents)

Watson, Nelson Herbert Frank
J 15: 203 (limnology of Heming L., Man.; correction on **16**: 929); **20**: 249, 841, 1089 (hatching of, lethal temperature for, & immature stages of *Triaenophorus*), 279 (lake whitefish feed)
PRC 2: 51 (*Triaenophorus* eggs & first intermediate stage)
CCG 3: 19 (commercial trout-rearing status)
S 591 (infecting cyclopid copepods with *Triaenophorus*)

Watt, Kenneth Edmund Ferguson
J 13: 613 (mathematical models for predicting & maximizing fishery yields)

Waves
CPO 1961-23 (wave suppressor in hydrographic model)
S 454 (effect on ship's use of current meter); **857** (stilling well to suppress, in hydrographic model)

Waves, internal (*see also* Oceanography; Wind effects)
J 18: 907 (in B.C. mainland inlets waters)
B 134: 40 (re Atl. oceanography)
PRP 98: 13 (in B.C. inlets)
CPO 1964-1 (re "slicks" on Juan de Fuca Strait)
S 376 (in Strait of Georgia); **807** (E subarctic Pac.)
SS 1290 (energy transformations)

Waxes (*see also* Spermaceti)
J 14: 46 (in sediments, seston, sewage, soils & waters); **18**: 907 (floating on Bute Inlet, B.C.)
B 59, 89 (in marine animal oils; *see* their indexes)
PRP 86: 17 (floating on Bute Inlet)
SS 1173 (floating on Bute Inlet)

Weakfish (*Cynoscion regalis*) (sea trout; squeteague)

J 16: 510 (Minas Basin, N.S. record)
B 155: 260 (full description)

Weather (*see also* Oceanography; Storms; Wind effects)
J 1: 121 (re replacement of Bay of Fundy waters); **2:** 383 (factor in pink salmon spawning migration); **3:** 343 (re lobster larvae distribution); **5:** 401 (effect on Juan de Fuca Strait currents); **6:** 476 (heat stroke in stream fishes); **7:** 447 (wind effect on salmon & eel movements); **8:** 9 (Great Slave L.), 178 (Skeena R. re sockeye salmon production); **12:** 4 (effects on B.C. offshore waters), 351 (effects on Miramichi R. estuary, N.B.), **13:** 357, **15:** 625 (effect on NE Pac. oceanic fish yields); **15:** 867 (Rivers Inlet, B.C.); **16:** 453 (arctic climate effect on sea); **19:** 101 (factors affecting shellfish toxicity); **20:** 119 (re ocean water mass transport), 597 (effect on Lake Ontario whitefish fishery), 939 (effect on seawater structure, W coast Vancouver Is.); **21:** 941 (effect on NE Pac. ocean structure)
B 51: 13 (wind effect on homing Atl. salmon); **134:** 61, 67 (re Canadian Atl. coast climate)
PRP 26: 5, **31:** 16, **33:** 11, **34:** 13 (re Pac. oceanic conditions)
S 175 (re Atl. salmon periodic scarcity); **306:** 157 (meteorology re Canada's oceans); **346:** 7 (rainfall effect on sardine fishery); **860:** 4 (re subarctic Pac. oceanography)
SS 456 (sea vs. air temperatures, Passamaquoddy Bay); **483** (forecasts re fisheries); **544** (sky halo); **665** (re B.C. coastal currents)

Weathership Station "P" (*see also* Oceanography, Pacific (N and NE open waters))
J 17: 353, **18:** 1073 (water characteristics variations at); **18:** 1 (zooplankton)
PRP 100: 11, **107:** 12 (oceanography from)
CPO (*see* list of references to these Circulars under Oceanography, Pacific (N & NE open waters))
S 631, 828 (primary marine productivity near); **669** (upper zone water features)

Weed, Alfred Cleveland
SS 187 (a collection of Vancouver Is. fishes)

Weight of fishes (*see also* Length–weight relations; Size)
J 20: 1441 (shrinkage due to preservation in formaldehyde)
B 27: 1, **41:** 8 (chinook salmon); **31:** 5, **90:** 16 (pink salmon); **31:** 10, **90:** 16 (chum salmon); **81** (Lake Manitoba fishes); **98:** 5 (beluga)
PRP 57: 12 (annual averages of pilchard, re size); **86:** 18 (young salmon, Nanaimo, B.C. area); **91:** 21 (Babine L. sockeye salmon smolts); **102:** 16 (Bella Coola sockeye)
CCG 3: 12 (heaviest fishes from Great Slave L.)
CVI 8 (various flatfishes & their livers)
NRB 15: 27 (Atl. dogfish); **17:** 124 (Atl. capelin)
S 54 (total, liver & gonads, of several Atl. fishes); (*see* list commencing with **77** under Salmon, sockeye (biology)); **214** (rainbow trout: loss at spawning time); **248** (sockeye & pink salmon); **250, 251** (rainbow trout); **285, 327, 343, 363, 423, 464, 500** (B.C. herring); **318** (speckled trout); **615** (changes on holding in refrigerated seawater)
SS (*see* list commencing with **92** under Salmon, sockeye (biology)); **621** (sampling error)

Weight of liquids (*see also* Specific gravity)
PRP 32: 17, **36:** 16 (determining for bulk fish oils)
SS 698, 728 (determining for bulk fish oils & other liquids)

Weir
C 1901: 59 (herring)
J 17: 136, 825, 829 (for N.B. herring)
B 121: 28 (of brush, for NW Atl. commercial herring)
S 356 (collecting, for Pac. salmon fry & adults)

Welsh Lake, N.B.
PRA 36: 6 (trout angling yields)

Wendigo (*see* Splake)

Werner, Arthur Eugene
J 18: 287 (decay of hexachlorocyclohexane in seawater)
S 734 (continuous liquid–liquid extractor); **796** (kraft pulpmill effluent sulphur compounds)

Westrheim, Sigurd Jergen
J 21: 855 (*Sebastodes brevispinis* in B.C.; corrections on page 1554)
SS 1378 (spawning Dover sole tagging results)

Weymouth, Frank Walter
J 1: 191 (Dungeness crab growth)
S 142 (Dungeness crab relative growth)
SS 121, 138, 161, 519 (Dungeness crab studies: growth, fishery, etc.); **122** (Crustacea found in Pac. halibut stomachs)

Whale (In addition to following species, *see* Whales (in general))

Whale, Atlantic bottlenose (*Hyperoodon rostrata*)
CNG 32R: 6 (description)

Whale, Baird's beaked (*Berardius bairdi*)
J 12: 97 (helminth parasites; correction on **16**: 385)
CNG 32R: 6 (description); **68** (distribution)
S 348 (2 B.C. records; description)

Whale, beaked (Atlantic) (*Mesoplodon densirostris*) (*see also* Whale, True's beaked)
J 14: 91 (Peggy's Cove, N.S.)
S 235 (Peggy's Cove)

Whale, beluga (*see* Beluga)

Whale, black right (*Balaena glacialis*)
J 11: 267, **12**: 121 (parasites)
CAG 7: 5 (Atl.)
CNG 68 (distribution)
S 851: 63 (in B.C. fishery)

Whale, blackfish (*see* Whale, pilot)

Whale, blue (*Balaenoptera musculus*) (rorqual)
J 8: 275 (lamprey marks on)
B 89: 347 (oil characteristics)
PRP 81: 84 (identification)
CAG 7: 4 (description of Atl.)
CNG 32R: 1, 68 (description & distribution of Pac.); **64**: 31, 52 (productive capacity of Atl. & Pac.)
CVI 17 (flesh B vitamins)
S 851: 62 (in B.C. fishery)

Whale, bottlenose (*Hyperoodon ampullatus*)
J 14: 83 (Nfld.); **20**: 245 (blubber oil analysis)
B 89: 350 (oil characteristics)
CAG 7: 6 (description)

Whale, bowhead (*Balaena mysticetus*) (Greenland whale)
J 11: 267 (parasites)
CAG 7: 12 (description)
CNG 32R: 4 (description); **64**: 57 (future Canadian Arctic fishery)

Whale, California gray (*Rhachianectes glaucus*)
J 11: 267 (parasites), 319 (lice; corrections on **16**: 385)

Whale, Cuvier's beaked (*Ziphius cavirostris*)
CNG 32R: 7 (description)

Whale, false killer (*Pseudocra crassidens*)
CNG 32R: 9 (description)

Whale, finback (*Balaenoptera physalus*) (fin whale; rorqual)
J 8: 275 (lamprey marks on); **11**: 267 (parasites); **12**: 97 (helminth parasites; correction on **16**: 385)
B 89: 347 (oil characteristics); **119**: 42 (antarctic survival)
PRP 51: 18, **83**: 28 (liver vitamin A); **79**: 30 (biometrics, sex ratio, etc.); **81**: 84 (identification), 86 (possible insulin source); **109**: 14 (antibiotic preservation of carcass)
CAG 7: 3 (identification, description, of Atl.)
CNG 32R: 1 (description of Pac.); **64**: 31, 52 (productive capacity of Atl. & Pac.); **68** (distribution)
CVI 17 (flesh B vitamins)
S 352 (growth); **851**: 62 (in B.C. fishery)
SS 111 (Labrador); **1077** (total mortality rates)

Whale, gray (*Eschrichtius gibbosus*) (*E. glaucus*)
J 12: 129 (lice); **19**: 815 (migration & feeding)

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B 89: 350 (oil characteristics)
CNG 32R: 3 (description); **68** (distribution)
S 851: 62 (in B.C. fishery)
SS 1038 (observations)

Whale, Greenland (*see* Whale, bowhead)

Whale, humpback (Atlantic) (*Megaptera novaeangliae*)
CAG 7: 12 (identification)
CNG 64: 31 (productive capacity)
S 686 (winter suckling of calf, Nfld.)

Whale, humback (Pacific) (*Megaptera novaeangliae*) (*M. nodosa*)
C 3: 501 (barnacles on)
J 8: 275 (lamprey marks on); **10**: 320 (colour pattern); **11**: 267, 319, **12**: 97 (lice & helminth parasites; correction on **16**: 385)
B 89: 347 (oil characteristics)
PRP 79: 30 (biometrics, sex ratio, etc.); **81**: 84 (idetnification), 86 (possible insulin source); **83**: 28 (liver vitamin A); **105**: 6, **109**: 14 (antibiotic preservation of carcass)
CNG 32R: 3 (description); **64**: 52 (productive capacity); **68** (distribution)
S 438 (CTC antibiotic preservative); **851**: 62 (B.C. fishery & prospects)

Whale, killer (Atlantic) (*Orcinus orca*) (*Grampus orca*)
J 14: 97 (NW Atl.)
CAG 7: 6 (description)

Whale, killer (Pacific) (*Orcinus orca*) (*Grampus rectipinna*; *O. rectipinna*)
J 11: 267 (parasite)
PRP 49: 17 (stranded on beach); **71**: 20 (an albino); **81**: 84 (identification)
CNG 32R: 8 (description); **68** (distribution)
S 851: 63 (re B.C. fishery)
SS 1043 (B.C.)

Whale, minke (*Balaenoptera acutorostrata*) (rorqual)
J 14: 101 (Nfld. catches); **20**: 1489 (biology & distribution in NW Atl.)
CAG 7: 5 (description)
CNG 32R: 2 (description); **64**: 31 (productive capacity); **68** (distribution)
S 851: 63 (in B.C. fishery)
SS 1002 (Norwegian industry)

Whale, North Pacific right (*Eubalaena sieboldi*)
CNG 32R: 4 (description)

Whale, pigmy sperm (*Kogia breviceps*)
J 14: 83 (Halifax harbour)
CNG 32R: 5 (description)

Whale, pilot (Northern Atlantic) (*Globicephala melaena melaena*) (blackfish; pothead whale)
J 14: 101 (Nfld.: habits, distribution & catches; correction on **16**: 929); **14**: 725 (consumer of squid)
B 132 (biology, Nfld.)
CAG 7: 6 (identification)
CNG 64: 30 (productive capacity)
S 578 (age from teeth); **759** (external characteristics); **819** (blubber oil fatty acids distribution re metabolism)
SS 407 (stranded); **1003** (Nfld. industry); **1143** (dependence on squid)

Whale, pilot (Northern Pacific) (*Globicephala scammoni*) ("blackfish")
CNG 32R: 8 (description); **68** (distribution)
S 759 (external characteristics)

Whale, pilot (Southern Atlantic) (*Globicephala melaena edwardi*)
S 759 (external characteristics)

Whale, pilot (Tropical Atlantic) (*Globicephala macrorhyncha*)
S 578 (age from teeth); **759** (external characteristics)

Whale, pothead (*see* Whale, pilot (northern Atlantic))

Whale, sei (*Balaenoptera borealis*) (rorqual)
C 3: 501 (barnacles on)
J 8: 275 (lamprey marks on); **11**: 267, **12**: 97 (parasites; correction on **16**: 385)
B 89: 347 (oil characteristics)
PRP 79: 30 (biometrics, sex ratio, etc.); **81**: 84 (identification); **109**: 14 (antibiotic preservation of carcass)
CAG 7: 5, 11 (description)
CNG 32R: 2 (description); **64**: 52 (productive capacity of Atl. & Pac.); **68** (distribution)
CVI 10 (liver oil yield & vitamin A)
S 851: 63 (in B.C. fishery)

Whale, Sowerby's beaked (*Mesoplodon bidens*)
J 14: 86 (description of Nfld.; correction on **16**: 929)

Whale, sperm (*Physeter catodon*) (*see also* Ambergris; Spermaceti)
J 8: 275 (lamprey marks on); **11**: 267, 319, **12**: 97, 121 (parasites; correction on **16**: 385)
B 59, 89 (blubber oil, liver oil, spermaceti; *see* their indexes)
PRP 51: 18, **83**: 28 (liver vitamin A); **26**: 19, **51**: 19 (ambergris); **65**: 67 (oil unsaponifiables & vitamin A); **79**: 30 (biometrics, sex ratio, etc.); **79**: 30, **83**: 27 (stomach contents); **81**: 84 (identification), 86 (possible insulin source); **99**: 35 (description & illustration of ambergris); **105**: 6, **109**: 14 (antibiotic preservation of carcass)
CAG 7: 5 (identification of Atl.)
CNG 32R: 5 (description); **64**: 32, 52 (productive capacity of Atl. & Pac.); **68** (distribution)
CVI 14 (oil uses)
S 439 (CTC antibiotic preservative); **851**: 63 (in B.C. fishery)

Whale, Stejneger's beaked (*Mesoplodon stejnegeri*)
CNG 32R: 7 (description)

Whale, sulphur-bottom (*see* Whale, blue)

Whale, True's beaked (*Mesoplodon mirus*)
J 14: 91 (Cape Breton, N.S.)

Whale, white (*see* Beluga)

Whale meal (*see* Meals)

Whale solubles (*see* Solubles, condensed)

Whale-lice (*see also* Amphipoda; Copepoda, parasitic)
J 11: 267, 319, **12**: 121 (amphipods of Pac. whales: descriptions, taxonomy & synonymy; corrections on **16**: 385)
S 522 (amphipods)

Whales (in general) (*see also* names of individual species; Blubber)
C 3: 501 (barnacles on N Pac. species)
J 8: 275 (lamprey marks on); **11**: 267, 319, **12**: 97, 121 (parasites; corrections on **16**: 385); **12**: 641 (liver extracts & hydrolysates); **14**: 83 (Nfld. records & catches; corrections on **16**: 929); **16**: 561 (enzyme treatment & viscosity of solubles)
B 59, 89 (oils & vitamins; *see* their indexes)
PRP 79: 40 (liver oils & vitamin A); **81**: 84 (identifications); **83**: 27 (feed); **93**: 20, **96**: 16 (condensed solubles & meals in ruminant digestion); **101**: 27 (solubles & meals in chick rations); **104**: 22, **105**: 6, **109**: 14 (antibiotic injected in carcasses to inhibit spoilage before processing); **105**: 16, **107**: 11 (sightings in NE Pac.)
CAG 7 (description of Atl. species)
CNG 32R (identification; key; description; of species off B.C. & Alaska); **64**: 52 (productive capacity); **68** (distribution; illustrations; forms for recording sightings; species off B.C.)
CVI 10 (yields of organs; products from organs; oils & vitamins; flesh as food); **20** (antibiotic control of carcass spoilage)
S 377 (solubles); **393, 453** (B.C. industry); **468** (antibiotic residues in flesh & liver after antibiotic control of spoilage); **552** (lice); **686** (off Nfld.)
SS 1004 (Nfld. & Labrador whaling); **1044, 1045** (B.C. industry & stocks)

Whalesucker (*Remilegia australis*)
B 68: 329, **68R**: 205 (full description)

Whaling (*see* Whales (in general); *also* names of individual species; *also* Blubber)

Wheel, fish
B 72: 13 (for commercial salmon in Yukon R. basin)

Whelks (*see also Polynices*)
C 3: 169 (*Buccinum undatum* & related genera; habits)
J 12: 287 (Naticidae egg masses)
SS 303 (*Buccinum* reactions)

White, Frank David
C 4: 1 (substances toxic to *Limnoria*), 9 (salinity & *p*H effect on marine wood borers), 19 (*Bankia* breeding season, Departure Bay, B.C.); **6**: 341 (dogfish creatine content)

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J 2: 457 (canned pilchard proximate analysis), 461 (fresh lingcod proximate analysis)
S 59 (reducing substances in dogfish, etc. blood)

White, H. T.
C 1911–14(II): 195 (Bryozoa of Georgian Bay, Ont.)

White, Harley Clifford
C 2: 135 (Ont. trout fry planting survival); **3**: 365, **5**: 203 (trout investigation, Forbes Brook, P.E.I.
J 2: 299 (N.S. kingfisher & merganser feed), 379 (Atl. salmon parr age determination), 391 (salmon homing, Apple River, N.S.), 499 (E Canada salmon fry feed); **3**: 323 (kingfisher & merganser local feeding); **4**: 1 (Atl. salmon local behaviour heritability), 48 (kingfisher nestling feed factor), 309 (N.S. merganser feed), 323 (Atl. salmon smolt seaward migration factors), 337 (eelpout nesting & embryo); **5**: 172 (sea lice re Atl. salmon mortality), 176, 258, 471 (anadromous trout life history); **6**: 24 (Atl. salmon louse life history), 37 (salmon redds vs. artificial spawning beds)
B 58 (bird predator control to increase N.S. salmon); **97** (eastern belted kingfisher); **116** (Atl. merganser)
PRA 7: 6 (Atl. salmon fry behaviour), 12 (trout survival after gill injury)
S 216 (kingfisher digestion changes)
SS 392, 520 (eastern brook trout); **521** (Atl. salmon theories)

White, Harold
J 20: 839 (Paloheimo linear equation for estimating mortalities)

Whiteaves, Joseph Frederick
C 1917–18: 259 (index to his catalog of E Canada marine invertebrates)

Whitefish, Atlantic (*Coregonus* species)
B 155: 104 (description & distribution of seagoing whitefish)

Whitefish, Bear Lake (*Prosopium abyssicola*)
J 18: 679 (osteology & phylogeny)

Whitefish, Bonneville (*Prosopium spilonotus*)
J 18: 679 (osteology & phylogeny)

Whitefish, broad (*Coregonus nasus*) (round-nosed whitefish; sheep-nose whitefish)
J 14: 657 (B.C. distribution); **18**: 679 (osteology & phylogeny); **19**: 687 (distinction from other *Coregonus* species)
SS 1208: 46 (full description, B.C.); **1324** (arctic distribution & ecology)

Whitefish, common (*see* Whitefish, lake)

Whitefish, Coulter's (*see* Whitefish, pigmy)

Whitefish, eastern (*see* Whitefish, lake)

Whitefish, humpback (*Coregonus pidschian*) (Lauretta herring)
J 19: 687 (re *C. nasus* & similar species); **20**: 749 (Squanga L., Yuk.)
B 94: 13 (re *C. nelsoni*, Squanga L.)
SS 1208: 169 (in Yukon & Mackenzie R. systems)

Whitefish, "humpback" (*see* references to "humpback" form under Whitefish, lake)

Whitefish, lake (*Coregonus clupeaformis*) (eastern whitefish; common whitefish; *C. nelsoni* sometimes used for a "humpback" form)
C 1911–14(II): 30 (Lake Huron); **1**: 427, **5**: 441 (Man. lakes); **6**: 165 (spawning & development, Ont.), 427 (growth, Ont.), 445 (feed & parasites, Ont.); **7**: 341 (parasites, Man.); **8**: 3 (Hudson & James Bay region)
J 6: 334 (*Triaenophorus* parasite effects); **8**: 77 (Maillard browning of flesh on cooking), 207 (Great Slave L.), 340 (N.B.); **9**: 101 (Ungava Bay); **10**: 51 (morphometry, Great Bear L.), 413 (Great Slave L. fishery potential); **11**: 284 (age & abundance, Lake Winnipeg); **12**: 499 (Skeena R. drainage basin); **13**: 135 (Alta.), 547 (effect of Lake Ontario fry plantings), 763, **14**: 656 (B.C. distribution); **14**: 599 (evolution; distribution); **15**: 203 (Heming L., Man.); **16**: 107, 131, **17**: 625 (Lake Winnipeg fishery); **16**: 505 (in rivers & sea, N.B. & N.S.); **17**: 81 (harmlessness of *Triaenophorus* in fillets for food); **18**: 283 (abnormal vertebrae), 293 (fecundity), 679 (osteology; phylogeny); **19**: 687, **20**: 749 ("humpback" form in N B.C.); **20**: 265 (growth & mortality), 279 (feed), 319 (movements of tagged, in

Great Slave L.), 597 (effects of artificial propagation & weather on abundance)

B 56: 39 (Okanagan Valley lakes, B.C.); **72**: 17, 39, 55, 76 (NW Canada); **76** (sampling for *Triaenophorus* re quality control); **94**: 12 ("humpback" form, as *C. nelsoni*); **107** (Great Slave L. fishery); **119**: 66 (survival rate; *see also* its index); **155**: 103 (occurrence in Atl. marine waters)

PRC 1: 31, **2**: 48, 51 (*Triaenophorus* parasitization); **1**: 41 (Great Slave L.)

PRP 28: 11 (history & results of transplantation into B.C.); **70**: 10, **74**: 6, 9, **78**: 6 (re salmon in Skeena R. lakes system); **74**: 19 (canning); **75**: 35 (canned smoked), 48 (body & oil composition); **76**: 78 (trimmings & offal utilization); **77**: 95 (X-raying for parasite detection)

CCG 1 (size in Great Slave L.); **3**: 12 (record size, Great Slave L.); **4**: 10 (specialty products from); **5**: 1 (fillet proximate analyses); **6**: 17 (sausage)

CNG 64: 61 (productive capacity)

CVI 9, 12, 13 (constituents; proximate analysis; vitamin A)

NRB 9: 7 (Nfld.)

S 144: 64 (B.C. distribution); **235** (in N.S. lake)

SS 358, 826 (Prairie Provinces industry); **403** (daily movements); **429** (population statistics in a lake); **458** (study of young); **916** (nylon gillnets for, Lake Erie); **918** (sequential analysis of sampling); **1208**: 44 (full description, B.C.); **1029** (beginning of Great Slave L. fishery)

Whitefish, Mackenzie (*Coregonus nasus kennicotti*)

S 728 (pilot plant for products)

Whitefish, mountain (*Prosopium williamsoni*) (grayling; Rocky Mountain whitefish) (*Coregonus williamsoni*)

J 5: 131, 337 (feed & growth); **11**: 679 (parasites; correction on **12**: 941); **12**: 499 (in Skeena R. drainage system); **13**: 762, **14**: 656 (B.C. distribution); **18**: 679 (osteology; phylogeny)

B 32: 44 (description, B.C.); **55**: 37 (re feed & bird predation); **56**: 39 (Okanagan L., B.C.)

PRP 32: 21 (control as sockeye salmon predator); **67**: 23, **68**: 55, **70**: 10, **72**: 28, **74**: 6, 9, **78**: 6 (in Skeena R. basin lakes)

S 144: 65 (B.C. distribution)

SS 1208: 40 (full description, B.C.)

Whitefish, pigmy (*Prosopium coulteri*) (*Coregonus coulteri;* Coulter's whitefish)

J 13: 789, **14**: 656 (B.C. distribution); **18**: 679 (osteology; phylogeny)

B 72: 12 (Yuk.); **94**: 16 (in B.C. & Alaska)

SS 1208: 42 (full description, B.C.)

Whitefish, Rocky Mountain (*see* Whitefish, mountain)

Whitefish, round (*Prosopium cylindraceum*) (*P. quadrilaterale*; *Coregonus cylindraceum*)

C 1911–14(II): 30 (Lake Huron); **8**: 6 (Hudson & James Bays region)

J 8: 221 (Great Slave L.); **9**: 103 (Ungava Bay); **10**: 51 (Great Bear L.); **11**: 680 (parasites; correction on **12**: 941); **13**: 789, **14**: 657 (B.C. distribution); **18**: 679 (osteology; phylogeny)

B 72: 41, **82** (Great Bear L.); **94**: 16 (Canadian Arctic & Subarctic); **107** (Great Slave L.)

CCG 3: 12 (record size, Great Slave L.)

S 144: 65 (B.C. distribution)

SS 1208: 39 (full description, B.C.)

Whitefish, round-nosed (*see* Whitefish, broad)

Whitefish, sheep-nose (*see* Whitefish, broad)

Whitefishes (*see* foregoing species; *also* Ciscoes)

J 13: 759, **19**: 687, **20**: 749 (Alaskan & northern Canadian species, distribution & synonymy); **14**: 599 (evolution & distribution); **18**: 679 (osteology & phylogeny)

SS 111, 117, 119 (Hudson & James Bays region); **332** (*Coregonus odonoghuei*); **758** (NW Canada)

Whiting (Atlantic) (*see* Hake, silver; *also* Whiting, blue)

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Whiting (Pacific) (*Theragra chalcogrammus*) (bigeye; Pacific pollock; walleye pollock)
J 21: 873 (host of *Caligus clemensi*)
B 68: 130, **68R:** 163 (full description)
PRP 26: 17 (liver oil vitamin A); **111:** 20 (trawled landings for mink feed)
CNS 1–11 inclusive, **13** (B.C. trawl catches by areas, 1945–63)
S 851: 49 (in B.C. fishery)

Whiting, blue (*Micromesistius poutassou*) (*Gadus poutassou*)
J 20: 849 (in W Atl.)
B 155: 209 (full description)

Whitman, Arthur Handfield
PRA 34: 3 (obituary of J. Dybhavn)

Whittaker, E. J.
C 1917–18: 229 (E Canada marine invertebrates; bathymetry & species index)

Whittaker, William Ross
SS 416 (fish age by otoliths)

Whyte, Earle Forrester
SS 676 (mussel toxicity)

Wickett, William Percy
J 11: 933, **15:** 229 (salmon eggs oxygen supply re anoxia; corrections on **16:** 385, 386); **15:** 797 (CO_2 effect on chum salmon egg development), 1103 (pink & chum salmon development & environmental factors); **21:** 657 (very late-spawning chum salmon)
PRP 78: 3 (fish age determination); **89:** 88 (coho salmon population, Nile Creek, B.C.); **93:** 7 (pink & chum production in controlled stream); **99:** 20 (measuring oxygen supply to salmon redds); **103:** 14 (pinks transplantation); **111:** 18 (return of planted pinks); **113:** 6 (adult pink behaviour), 8 (pink fry behaviour), 16 (flood damage to bed of Qualicum R., B.C.)
CNG 13 (salmon catch predictions, 1948)
S 391 (B.C. salmon freshwater development); **711** (pink salmon environmental variability & reproduction potentials)
SS 1055 (Nile Creek pink & chum); **1104, 1105** (Jones Creek artificial salmon spawning bed); **1312** (water quality problems)

Wiener, fish (*see* Sausage)

Wight, Harold George
J 20: 679 (marine fish tissue culture), 743 (in-vitro maturation of *Phocanema decipiens*)

Wilby, George Van
J 9: 141 (first B.C. smooth lumpsucker record)
PRP 23: 3 (B.C. sharks); **25:** 9 (B.C. rays); **29:** 8 (B.C. lamprey & hagfish); **40:** 3 (B.C. flatfishes)
B 54 (lingcod life history, catches, uses, etc.); **68, 68R** (full descriptions, etc., of B.C. marine fishes)
S 143 (B.C. goby & cottid); **160** (fur seal stomach contents); **290** (collection of B.C. fishes)
SS 299 (lingcod as food fish); **470** (goby habits & colour); **522** (ichthyological treasures from "Albatross" Expedition); **795** (some B.C. marine fish records); **821** (collections of B.C. fishes)

Wilce, Robert Thayer
SS 1288 (arctic & subarctic intertidal zonation)

Wilder, Donald George
J 8: 486 (metals toxic to lobsters); **9:** 169 (anadromous re freshwater brook trout populations); **10:** 371 (lobster growth rate); **15:** 1345 (lobster activity & catchability re temperature); **17:** 553 (Passamaquoddy tidal power project re lobsters); **18:** 367 (inactivating lobster claws); **20:** 305 (lobster movements, growth & survival)
PRA 34: 22 (lobster trap dimensions re catch); **37:** 10 (lobster tagging for population re fishing); **41:** 14, **64:** 3 (lobster growth & movements); **62:** 24, **66:** 24 (holding conditions for live lobsters); **69:** 12 (fall and spring lobster movements)
CSG 4 (lobster traps); **11** (protection of short lobsters); **14** (lath spaces in lobster traps); **21** (holding lobsters); **24** (lobster fishery)
S 528 (lobster fishery regulation); **681** (improved lobster-claw banding procedure)
SS 840 (*Salmo salar* & *S. salar sebago* comparisons); **1056** (lobster trap tests); **1139** (reason for lobster fishing regulations); **1170** (25 years of lobster tagging); **1171, 1400** (Canada's lobster fishery); **1172, 1379** (lobsters do not migrate far)

Wilimovsky, Norman Joseph
J 21: 477 (theoretical reproduction curves), 1129 (Greenland halibut distribution)

Wilke, Ford
SS 1096 (fur seals distribution & feed)

Wilkie, Donald
J 20: 1505 (redescription of rare B.C. cottid)

Willey, Arthur
C 1911–14(I): 1 (plankton at St. Andrews, N.B.); **1914–15**: 1 (B.C. halibut fisheries investigation); **1**: 303 (free-living Copepoda distribution); **4**: 527 (intertidal harpacticoids, St. Andrews); **6**: 483 (Hudson Bay copepod plankton)
S 3 (arctic Copepoda, Passamaquoddy Bay, N.B.); **5** (Atlantic Biological Station faunal notes)
SS 83 (estuarial plankton, St. Croix R., N.B.); **182** (Canadian Fishery Expedition Atl. Copepoda); **208** (copepods economic history); **259** (ecology re partition of biology)
J 6: 207 (obituary of)
SS 761 (obituary of)

Williams, Merton Yarwood
SS 1173 (Bute Inlet "wax", B.C.)

Williams, Peter Montague
SS 1313 (ancient seawater in Powell L., B.C.)

Williamson, Gordon Ridpath
J 20: 1085 (porpoise from shark stomach)
S 686 (winter suckling of humpback whale); **756** (tagged cod crosses Atl. Ocean); **836** (2 giant trout from a Nfld. lagoon)
SS 1350 (Nfld. bluefin & other tunas); **1380, 1381, 1401** (Soviet fishery in W Atl.)

Williamson, Henry Charles
C 3: 265 (B.C. salmon tagging, 1925); **4**: 453 (B.C. salmon tagging & returns, 1925–26)
B 26 (Vancouver Is. salmon tagging)
SS 354 (pilchard & its associates); **355, 356, 357** (salmon trolling off B.C.); **366** (Pac. salmon migrations); **393** (B.C. herring fishery); **394** (various animals on B.C. coastal fishing grounds); **395, 417** (chinook salmon)
PRP 83: 44 (obituary of)

Willoughby, Donald Stuart
PRA 51: 3, 7 (fish quality in Ont. retail stores)

Wilmot, Isobel
J 7: 430 (*Pseudomonas* from Atl. cod fillets)

Wilmot Stream, P.E.I.
J 20: 327 (brook trout studies)

Wilson, Anna Margaret
NRB 5 appendix (*Ceratium* as indicator of hydrographic conditions)
NSB 7 (production & composition of salt); **11** (fish meal & uses)

Wilson, Charles Branch
C 1906–10: 85 (new & other B.C. marine parasitic copepods)
J 2: 355 (*Argulus* copepod on N.S. fishes)
S 2 (parasitic copepods of N.S. river)

Wilson, John Tuzo
S 306: 163 (geophysics re Canada's oceans)

Wilson, Mildred Stratton
J 21: 1069 (characteristics of Nitinat L., B.C.)

Wilson, Raymond Willet
PRA 46: 6 (cooling rate of gutted fish in holds)

Wilson, Robert McNair
J 18: 291 (B.C. longfin cod record); **20**: 1095 (B.C. blacktail snailfish record)

Wilton, Helen Isabel
C 4: 81 (soft-shell clam growth conditions)

Wilton, Margaret Harvey
C 4: 81 (soft-shell clam growth conditions)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Winchester, Paul Maurice
J 16: 33 (Atl. cod muscle protein chemistry)

Wind effects (*see also* Oceanography; Storms; Waves; Weather)
J 13: 1 (re water movements, Georgian Bay, Ont.); **14**: 252, 418 (on Strait of Georgia oceanography), 931, **15**: 1097 (on drift bottles & buoys); **14**: 945 (on Hecate Strait region), 945, **15**: 1170 (on sea level); **15**: 78 (re Scotian Shelf surface waters), 1178 (re arctic ice discoloration); **16**: 612, **19**: 1121, **21**: 397, 941 (on N & NE Pac.); **16**: 671 (on ship, etc., during current measurement); **17**: 743 (on Passamaquoddy Bay tidal currents); **18**: 907 (on B.C. mainland inlets waters), 1027 (on Juan de Fuca Strait)
B 51: 13 (on homing Atl. salmon); **134**: 37, 61 (on Atl. oceanography)
SS 183 (on Atl. hydrodynamics)

Windowpane (*Scophthalmus aquosus*) (*Lophopsetta aquosa; L. maculata;* Atlantic brill; sand flounder; spotted flounder; windowpane flounder)
C 1902–05: 90 (Cape Breton, N.S.); **1918–20**: 112 (Magdalen Is., N.B.)
J 11: 958 (trematode parasite); **16**: 822 (Miramichi estuary, N.B.)
B 155: 386 (full description)
PRA 25: 12 (nomenclature & distribution in local catches)
CSG 12 (description & fishery)
NSB 14: 22 (life history)
S 234 (Malpeque Bay, P.E.I.)

Winkles (*see* Periwinkles)

Winnipeg, Lake, Man.
C 1: 419 (fishes); **7**: 177 (mayflies); **5**: 382 (limnology), 422 (whitefish)
J 8: 469 (*Triaenophorus* & ciscoes); **11**: 284, **17**: 625 (whitefish & its fishery); **12**: 920 (burbot); **16**: 107, 131 (commercial fisheries catches), 144 (winter temperatures, dissolved O_2 & CO_2)
S 319 (nylon vs. cotton gill nets); **357** (fishes)
SS 358 (plankton & benthos); **359** (sturgeon); **472** (plankton)

Winnipeg River, Ont.
SS 382 (effect of pollution on fish)

Wire
J 12: 134 (for fish tagging; corrosion)

Wisby, Warren Jensen
J 11: 472 (olfactory role in migrating chum salmon); **21**: 613 (carp, etc. net avoidance behaviour)

Wisconsin
J 12: 447 (Flora L. fish population estimate)

Witch (*see* Flounder, witch; Sole, rex)

Withler, Frederick Curtis
J 15: 1007 (Skeena R. sockeye salmon spawning stock size & production); **21**: 1329 (sockeye stock size & resultant production)
B 101, 106 (rockslide effects on Babine R. salmon)
PRP 74: 9, **78**: 6 (Skeena R. drainage lakes limnology); **82**: 16 (Babine R. sockeye egg content); **91**: 13 (Babine R. system sockeye reproduction); **91**: 17 (Babine sockeye smolt run size); **104**: 15 (young lamprey attack on coho salmon fingerling)
SS 1008 (Babine sockeye smolts)

Woad
SS 1279 (indigotin content)

Wodehouse, Roger Philip
C 1914–15: 103 (Atl. cod life history from scales)

Wolf eel, common (*see* Eel, common wolf)

Wolf-eel (*Anarrhichthys ocellatus*)
B 68: 171, **68R**: 366 (full description)

Wolffish, arctic (*see* Wolffish, northern)

Wolffish, Atlantic (*Anarhichas lupus*) (common catfish; striped wolffish)
C 1902–05: 87, **1918–20**: 112 (Cape Breton, N.S.); **1902–05**: 91 (trematode parasites); **8**: 291 (intestinal bacteria)
J 7: 96 (thiaminase in); **14**: 867 (nematode parasites); **18**: 893 (proximate composition)
B 109, 141 (catches & value in Nfld. cod longlining experiment); **155**: 299 (full description)
CJG 1–11 inclusive (Nfld. landings, 1953–63)
CNG 64: 18 (productive capacity)

CSG 2 (Atl. offshore landings, 1938–40)
S 203 (off N.S.)
SS 134 (unutilized resource)

Wolffish, broadheaded (*see* Wolffish, northern)

Wolffish, northern (*Anarhichas denticulatus*) (*A. latifrons;* arctic wolffish, broadheaded catfish; bull-headed catfish)
C 1902–05: 87 (Cape Breton, N.S.)
J 14: 867 (nematode parasites)
B 155: 298 (full description)
S 235 (off N.S.)

Wolffish, spotted (*Anarhichas minor*) (leopardfish; spotted catfish)
C 1902–05: 87 (Cape Breton, N.S.)
J 14: 867 (nematode parasites)
B 109, 141 (catches & value in Nfld. cod longlining experiment); **155**: 301 (full description)
CNG 64: 18 (productive capacity)
S 203, 226 (off N.S.)

Wolffish, striped (*see* Wolffish, Atlantic)

Wolfgang, Robert William
J 11: 954, 963 (trematode *Stephanostomum* parasitic on Atl. flounders; correction on **12**: 942)
SS 1009, 1101 (*Stephanostomum* morphology, taxonomy & life cycle)

Woloszynskia (dinoflagellate)
S 550 (structure of new species)

Wood (*see also* Cellulose; Gribble; Pollution; Shipworm; Wood-borers)
J 21: 1549 (lobster tolerance to extracts from woods used for tanks)

Wood, Albert Lewis
J 6: 380 (drying heavily salted fish); **20**: 997 (cooling wet heavily salted fish)
PRA 34: 10, **43**: 3 (tunnel-type smokehouse); **35**: 26, **37**: 18 (salt fish dryer); **39**: 14 (auxiliary dryer for kipper snacks); **40**: 6, **57**: 9 (aluminum filleting table)
CHO 29, 35 (tunnel smokehouse specifications)
CHN 12 (accelerated salt fish cooling)
SS 704 (fish drying); **812** (cross-ventilated tunnel smokehouse); **927** (salt fish drying)

Wood, Alex James
J 6: 45 (fish bacteria glucose metabolism), 53 (fish spoilage surface effects), 194, 243 (bacterial trimethylamine oxide reduction); **7**: 17 (bacterial effect on choline)
PRA 34: 19 (decolorizing cod liver oil); 21 (alkali refining cod liver oil); **35**: 14 (Atl. dogfish liver oil vitamin A), 20 (fish cutting tables)
SS 768 (fish plant modernization); **769** (*Shigella* bacteria classification); **772** (rapid marine fish spoilage test); **786** (*Shigella* synthesis of trimethylamine from choline)

Wood, James Douglas
J 16: 755 (frozen lingcod fillet lipase activity); **17**: 347 (maturing sockeye salmon histidine content), 903 (marine products effect on mammalian blood cholesterol levels); **18**: 377 (fish oil & vitamin A hypocholesterolemic activities); **19**: 169 (lingcod & gray cod frozen fillet fat hydrolysis)
S 539 (spawning migratory salmon biochemistry); **542** (marine teleosts nitrogen secretion); **569** (lingcod muscle lipase activity); **593, 613, 617** (dietary marine fish oils re cholesterol metabolism); **667** (cholesterol metabolism factors in chickens); **691** (hypocholesterolemic activity of vitamin A substances); **701** (hypocholesterolemic agents from marine algae sterols); **809** (excess vitamin A effect on hen egg production)
SS 1174 (fatty acid inhibition of cholesterol synthesis); **1198** (spawning sockeye muscle non-protein N constituents)

Wood borers, marine (*see also* Gribble; Shipworms)
J 15: 1152 (review of investigations)
CGR 10 (copper oleate as deterrent)
S 19 (Pac. coast); **44** (Atl. coast)
SS 209 (some new); **278, 325, 1416** (B.C.)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO, CHN**—Halifax; **CJG**—St. John's; **CNG, CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG, CSS**—St. Andrews; **CVI, CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB, NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

Woodland, Gladstone Bruce
SS 1351 (arctic research problems)

Woodman, Alice S.
SS 690 (Atl. salmon pituitary gland)

Woods Lake, B.C. (*see also* Okanagan Lake)
B 56: 25 (limnology; biological survey)

Worm, bait (*see* Baitworms)

Worm, blood (*see* Bloodworm)

Worm, cod (*see* *Phocanema decipiens*)

Worm, ice (*see* Iceworm)

Worm, mud-blister (*Polydora ciliata*)
J 6: 498 (description; effects of commensalism in Atl. oyster)
B 131: 85 (life history; effects on Atl. oyster)
S 5 (effects on Atl. oyster & whelk)

Worm, sand (*see* Sandworm)

Worm, tube (*see* *Eudistylia*; Polychaeta)

Worms (*see also* Annelida; Baitworms; Bloodworm; Cestoda; Iceworm; Parasites; *Phocanema decipiens;* Polychaeta; Sandworm; *Triaenophorus;* Trematoda, etc.)
SS 12 (notes on); **125** (luminescent); **1033** (marking method for)

Worthington, Lawrence Valentine
J 21: 327 (NW Atl. anomalous sea temperatures)

Worthington, Marjorie Elsie
S 560 (DDT forest spray effects on young salmon)

Wounds (*see* Injury, recovery from)

Wreckfish, Atlantic (*Polyprion americanus*) (shern)
B 155: 236 (full description)

Wright, Robert Ramsay
C 1902–05: 1 (N.S. marine plankton as fish feed)
SS 33 (early Atlantic Biological Station work)

Wrymouth (*Cryptacanthodes maculatus*) (ghostfish)
C 1902–05: 87 (N.S.), 91 (trematode parasites)
J 16: 512 (Passamaquoddy Bay record, N.B.), 827 (Miramichi Bay, N.B.)
B 155: 307 (full description)
S 5: 4 (description); **101** (myxosporidian parasites)

Wrymouth, giant (*Delolepis gigantea*)
B 68: 184, **68R:** 378 (full description)

Wylie, Vivian
S 880 (Pac. oyster nucleotides)

Wynne, Arthur Marshall
C 4: 317 (halibut muscle tryptic hydrolysis)

Wynne-Edwards, Vero Copner
B 72: 6 (Yukon fisheries survey), 21 (Mackenzie R. fisheries survey); **94** (Canadian Arctic & Subarctic freshwater vertebrates)

X

Xanthophylls (*see also* Pigments)
B 89: 79 (of fish oils); **122:** 34 (of phytoplankton)

Xeneretmus latifrons (*see* Poacher, blacktip)

Xenodermichthys socialis (*see* Gymnast, Atlantic)

Xenolepidichthys americanus (*see* Grammicolepid)

Xenopyxis latifrons (*see* Poacher, blacktip)

Xererpes fucorum (*see* Gunnel, rockweed)

Xiphias gladius (*see* Swordfish)

Xiphister mucosus (*see* Prickleback, rock)

X-ray
PRP 77: 99 (for whitefish parasites); **105:** 3, **107:** 13 (for shipworms in wood)
S 588 (coho & sockeye salmon digestive tract); **602** (stereoscopy for shipworm growth rate)

Xylotrya setacea (*see* Shipworms)

Y

Yablokov, Alexei V.
S 870 (harp seal cranial variation)

Yamamoto, F. T.
SS 1333 (young Atlantic salmon territorial behaviour)

Yates, Arthur Nelson
CNS 1–10 inclusive (B.C. trawled groundfish landings statistics, 1945–61)

Yates, Peter
SS 926 (fatty acids synthesis)

Y-blenny; Y-prickleback (*see* Prickleback, Y-)

Yeasts
PRP 93: 20 (fishery byproducts for stimulating growth)
S 377, 457 (fishery byproducts for stimulating growth); **417** (inhibition in smoked fish); **653** (chemical reduction of dicarboxylic acids); **858** (in seawater suspended matter)

Yellowfin (*see* Tuna, yellowfin)

"Yellowing" of halibut (*see* Discoloration)

Yellowtail (*see* Flounder, yellowtail)

Yield (The following is not an exhaustive listing; *see also* Catches; Creel census; Statistics; *also* following two headings *and* other cognate subjects)
J 15: 605 (re marine climate), 831 (re lingcod minimum size; correction on **16:** 386); **15:** 991 (computation from numerical models), 1007 (of Skeena sockeye salmon); **19:** 521 (effect of reducing fishing effort), 531 (of sockeye in high-seas & inshore fisheries); **21:** 1 (re fluctuating environment), 905 (high-seas vs. coastal fishing for Pac. salmon), 1245 (population dynamics model for Pac. salmon)
B 119 (re fish populations; *see* its index)
PRA 36: 6, **38:** 3, **42:** 7, **43:** 9, **58:** 21 (brook trout)
S 484 (re productivity & reproduction)

Yield, equilibrium (*see also* note to heading Yield)
J 15: 831 (of lingcod)
B 119 (re fish populations; *see* its index); **139** (in Strait of Georgia trawl fishery)
S 484 (calculation of)

Yield, maximum sustained (*see also* note to heading Yield)
J 13: 613 (computation methods); **15:** 991 (from numerical models), 1007 (Skeena sockeye salmon); **17:** 199 (chinook salmon); **20:** 1371 (from sockeye stocks; correction on **21:** 1554)
B 119 (re fish populations; *see* its index); **139:** 49 (gray cod & lemon sole in B.C. trawl fishery)
CCG 1 (ringed & bearded seals)
SS 780, 802, 819 (computations); **894** (estimation for Great Slave L.)

Yield, processing (*see* under names of products; *also* of products under names of organisms)

Young, E. L.
SS 668 (*Labryinthula* on B.C. eel grass)

Young, Elrid Gordon
J 16: 7 (Atl. coastal seawater composition; correction on page 930)
SS 787 (Irish moss organic acid)

Young, Otto Christian
C 6: 417 (deep-sea sampler for bacteria); **7:** 495 (jacketed cold storage room); **8:** 475 (cold storage room construction principles)
PRP 8: 3, **11:** 7 (refrigeration research programs); **14:** 12, **15:** 11 (avoiding cold-stored fish dehydration); **17:** 13, **19:** 17, **29:** 3, **34:** 18, **62:** 17 (roof-tank railway refrigerator car design & tests); **22:** 11, **26:** 12 (cooling & freezing curves for fish); **24:** 18 (glazes for frozen fish); **32:** 9, **45:** 7 (freezer studies); **35:** 18 (cooling capacity of natural vs. artificial ices); **37:** 12 (tasting panel tests for fresh vs. frozen halibut);

38: 3, **39**: 16 (ultraviolet light for sterilizing fillets & brines); **42**: 16 (tasting panel tests for fresh vs. frozen salmon); **43**: 3 (preparing shrimps for freezing); **47**: 3, **50**: 16 (fish thawing); **51**: 12 (ammonia evaporators re refrigeration); **52**: 7 (pressure cooling of canned fish), 19 (vacuum in canned herring); **56**: 4 (fish smoking & drying tunnel), 7 (dehydrated fish); **77**: 100, **78**: 21, **79**: 27, **82**: 11, **86**: 21 (mechanically refrigerated railway refrigerator car tests under cooling & heating conditions); **63**: 41 (anchovy products); **67**: 27, **70**: 4 (refrigerative insulation studies); **74**: 3 (frozen shrimp storage); **78**: 17 (air-conditioned processing tunnel)

S 309 (fish quality, freezing, storage & transportation); **323** (railway car mechanical refrigeration); **338** (jacketed cold storage principles); **595** (fish freezing); **675** (lack of commercial application of refrigeration research); **742** (handling & processing problems); **768** (Canadian fish freezing at sea)

SS 632 (improved fishery products); **691, 950** (care in fish handling & stowing); **692** (fish preservation by freezing); **723, 866** (new type of railway refrigerator car); **755** (freezing & thawing effect on canned herring); **788** (new Canadian fish dehydration methods); **951** (fishery products transportation); **1140** (frozen fish shelf-life factors)

Yu, Kee-Chung
CPO 1961-26 (sea productivity at Pacific Ocean weathership)

Yugoslavia
SS 1034 (fisheries technology)

Yukon Territory (*see also* names of individual localities, rivers and lakes)
J 20: 749 (Squanga L. whitefish)
B 72: 5 (fisheries survey); **94** (freshwater vertebrates)
CNG 64: 60 (fisheries potential)
SS 758 (coregonids)

Yurkowski, Michael
J 21: 1379 (plankton lipids fatty acids)

Z

Zalophus californianus (*see* Sea lion, California)

Zaniolepis latipinnis (*see* Combfish, longspine)

Zaprora silenus (*see* Prowfish)

Zeaxanthin (*see* Pigment)

Zenopsis ocellata (*see* Dory, American John)

Zimmerman, Howard Karl Jr.
J 10: 583 (chitin ultraviolet spectrum & basicity)

Zinc compounds
J 16: 7 (in Atl. coastal seawater); **20**: 229 (in B.C. whole herring meal); **21**: 17 (lethality to young Atl. salmon)
PRA 1: 12 (in piped water toxic to salmon)
CSG 38, 42 (toxicity to river salmon)

Ziphius cavirostris (*see* Whale, Cuvier's beaked)

Zirfaea gabbi (*see* Clam, rock-borer)

Zoarces anguillaris (*see* Pout, ocean)

Zoarcidae
S 826 (eelpout genera)
SS 601 (new species)

Zoogeography (*see also* Distribution)
J 21: 977 (lake trout), 1129 (Greenland halibut)
S 802 (arctic phytoplankton species successions)

Zooplankton, arctic marine, in general (*see also* Fauna; Feed studies; Larvae; Plankton; *also* names of classifications *and* names of localities and bodies of water)
J 6: 419 (*Themisto*); **9**: 223 (biology); **14**: 1186 (in mud & ice); **16**: 453 (off Igloolik, N.W.T.); **19**: 377 (Foxe Basin)
B 73 (fish larvae)
S 361 (ecology); **469** (Ungava Bay)

Zooplankton, Atlantic marine, in general (*see also* Fauna; Feed studies; International Commission for the Northwest Atlantic Fisheries; Larvae; Plankton; *also* names of classifications *and* names of localities and bodies of water)

C 1902–05: 1 (eastern N.S.); **1906–10**: 221 (bivalve larvae recognition); **1911–14(I)**: 1 (St. Andrews, N.B.); **1918–20**: 85, 93 (tomopterids; tunicates); **3**: 179, 331 (Entomostraca, etc., Belle Isle Strait)

J 2: 95, 401 (herring feed); **3**: 189 (Bay of Fundy & Gulf of Maine); **5**: 164, **17**: 377 (estuarial); **9**: 223 (central Labrador sea); **11**: 239 (Belle Isle Strait); **15**: 1219, **17**: 409 (Bay of Fundy); **20**: 1031, 1519 (relation & distribution off British Isles)

S 549 (*Prorocentrum* dinoflagellates)

Zooplankton, freshwater, in general (*see also* Fauna; Feed studies; Limnology; Plankton; *also* names of classifications *and* names of localities and bodies of water)

J 5: 164 (re marine, in an estuary); **11**: 479 (entomostracan, Lakelse L., B.C.); **13**: 53 (Great Slave L.); **15**: 211 (Heming L., Man.)

S 138 (copper sulphate effect on); **885** (Babine L. system pelagic entomostracan, B.C.)

Zooplankton, marine in general (*see also* Productivity)

J 20: 685 (adaptive value of vertical migration); **21**: 639 (subsamples)

Zooplankton, Pacific marine, in general (*see also* Fauna; Feed studies; Larvae; Plankton; *also* names of classifications *and* names of localities and bodies of water)

J 14: 521 (Strait of Georgia collections); **16**: 295 (distribution in a sound); **18**: 1 (NE Pac.); **19**: 657 (quantitative estimations off B.C. & Washington); **21**: 1075 (in a tidal lake)

PRP 49: 10 (constituting red feed); **107**: 3 (NE Pac.), 5 (Dixon Entrance)

S 80 (quantitative, Strait of Georgia); **98** (descriptions)

Zostera marina (*see* Eel-grass)

C—Contr.; **J**—Journal; **B**—Bulletin; **AF**—Can. Atl. Fauna; **PF**—Can. Pac. Fauna; **PRA**—Prog. Rep. Atl. Coast Sta.; **PRC**—Prog. Rep. Biol. Sta. Tech. Unit, London; **PRP**—Prog. Rep. Pac. Coast Sta.; *Circular series:* **CAG**—Montreal; **CCG**—London; **CFI**—Fish Insp. Lab. Halifax; **CGR**—Grande-Rivière; **CHO**, **CHN**—Halifax; **CJG**—St. John's; **CNG**, **CNS**—Nanaimo; **COF**—St. Andrews; **CPO**—Nanaimo; **CSG**, **CSS**—St. Andrews; **CVI**, **CVG**—Vancouver; **MSP**—Misc. Spec. Publ.; **NRB**, **NSB**—Bull. Nfld. Govt. Lab. St. John's; **S**—Studies; **SS**—Studies Suppl.

APPENDIX

LIST OF PUBLICATIONS AND TITLES
1900–1964

DEALING WITH WORK OF THE

FISHERIES RESEARCH BOARD OF CANADA

(Formerly the Biological Board of Canada)

1. CONTRIBUTIONS

(a) CONTRIBUTIONS TO CANADIAN BIOLOGY

Abbreviation: C

1901 Volume (*published in 1901*)

1. Marine biological station of Canada. Introductory notes on its foundation, aims and work. By E. E. Prince, p. 1–8.
2. The effects of polluted waters on fish life. A preliminary report. By A. P. Knight, p. 9–18.
3. The clam fishery of Passamaquoddy Bay. By J. Stafford, p. 19–40.
4. Report on the flora of St. Andrews, N.B. By James Fowler, p. 41–48.
5. Food of the sea urchin (*Strongylocentrotus dröbachiensis*). By F. H. Scott, p. 49–54.
6. The paired fins of the mackerel shark. By E. E. Prince and A. H. MacKay, p. 55–58.
7. Report on the sardine industry in relation to the Canadian herring fisheries. By B. Arthur Bensley, p. 59–62.

1902–1905 Volume (*published in 1907*)

1. The plankton of eastern Nova Scotia waters. An account of floating organisms upon which young food-fishes mainly subsist. By R. Ramsay Wright, p. 1–19.
2. The effects of dynamite explosions on fish life. A preliminary report. By A. P. Knight, p. 21–30.
3. On the fauna of the Atlantic coast of Canada. An introductory report. By J. Stafford, p. 31–36.
4. A further report upon the effects of sawdust on fish life. By A. P. Knight, p. 37–54.
5. The Diatomaceae of Canso Harbour, Nova Scotia. A provisional list. By A. H. MacKay, p. 55–58.
6. Report on the flora of Canso, Nova Scotia. By James Fowler, p. 59–70.
7. The seaweeds of Canso. Being a contribution to the study of eastern Nova Scotia algae. By C. B. Robinson, p. 71–74.
8. Report on the marine Polyzoa of Canso, N.S. By George A. Cornish, p. 75–80.
9. Notes on the fishes of Canso. By George A. Cornish, p. 81–90.
10. Preliminary report on the trematodes of Canadian marine fishes. By J. Stafford, p. 91–94.
11. The eggs and early life-history of the herring, gaspereau, shad and other clupeoids. By Edward E. Prince, p. 95–110.
12. Sawdust and fish life. Final report. By A. P. Knight, p. 111–120.
13. Professor Macallum on the chemistry of Medusae. A condensed résumé of results. By Edward E. Prince, p. 121–128.

1906–1910 Volume (*published in 1912*)

1. Report on the Atlantic Biological Station of Canada, St. Andrews, N.B., for 1908. By D. P. Penhallow, p. 1–21.
2. Fishery bait experiments. A preliminary report upon the comparative merits of different kinds of bait used in cod fishing along Gaspé Peninsula. By A. P. Knight, p. 23–32.
3. Notes on the Actiniae occurring in the neighbourhood of the Biological Station, St. Andrews, N.B. By J. Playfair McMurrich, p. 33–35.

4. On the fauna of the Atlantic coast of Canada. Second report—Malpeque, 1903–1904. By J. Stafford, p. 37–44.
5. On the fauna of the Atlantic coast of Canada. Third report—Gaspé, 1905–1906. By J. Stafford, p. 45–68.
6. On the fauna of the Atlantic coast of Canada. Fourth report. By J. Stafford, p. 69–78.
7. Notes on fishes of Tignish, Prince Edward Island. By George A. Cornish, p. 79–81.
8. On a collection of Crustacea made at St. Andrews, N.B. By D. L. MacDonald, p. 83–84.
9. Parasitic copepods from Nanaimo, British Columbia, including eight species new to science. By Charles Branch Wilson, p. 85–101.
10. Holosomatous ascidians from the coast of western Canada. By A. G. Huntsman, p. 103–185.
11. Preliminary list of one hundred and twenty-nine species of British Columbia decapod crustaceans. By George W. Taylor, p. 187–214.
12. A new genus and species of cottoid fish from Departure Bay, Vancouver Island. By Charles H. Gilbert, p. 215–216.
13. Oyster culture and clam fishing, Prince Edward Island. By E. W. MacBride, p. 217–220.
14. On the recognition of bivalve larvae in plankton collections. By J. Stafford, p. 221–242.
15. Some recent diatoms, freshwater and marine, from the vicinity of the Biological Station, St. Andrews, N.B., August 20–30, 1909. By L. W. Bailey, p. 243–264.
16. Notes on the flora of the St. Croix River valley and Passamaquoddy region, New Brunswick. By A. B. Klugh, p. 265–276.
17. Contributions to the physiology of the American lobster. The physiology of the intestine. By F. R. Miller, p. 277–280.
18. The temperatures and densities and allied subjects of Passamaquoddy Bay and its environs. Their bearing on the oyster industry. By G. G. Copeland, p. 281–294.
19. The geological environment of the British Columbia Biological Station at Departure Bay. Vancouver Island. By E. M. Burwash, p. 295–305.

1911–1914 Volume (*published in 1915*)

Fasc. I. Marine biology.

1. The plankton in St. Andrews Bay. By A. Willey, p. 1–9.
2. The plankton diatoms of the Bay of Fundy. By L. W. Bailey, p. 11–23.
3. Studies on the Sporozoa of the fishes of the St. Andrews region. By J. W. Mavor. p. 25–38.
4. A new Caprellid from the Bay of Fundy. By A. G. Huntsman, p. 39-42.
5. Preliminary notes on the Mollusca of St. Andrews and vicinity. New Brunswick. By John D. Detweiler, p. 43–46.
6. A list of fleshy fungi collected at St. Andrews. New Brunswick. By Adaline Van Horne and Mary Van Horne, p. 47–50.
7. The iodine content of the marine flora and fauna in the neighbourhood of Nanaimo. Vancouver Island, B.C. By A. T. Cameron, p. 51–68.
8. On some of the parasitic copepods of the Bay of Fundy fish. By V. Stock. p. 69–71.
9. Some experiments on the freezing and thawing of live fish. By W. H. Martin. p. 73–75.

Fasc. II. Fresh water fish and lake biology.

1. The fishes of Georgian Bay. By B. A. Bensley, p. 1–51.
2. Notes on the Odonata of the vicinity of Go-Home Bay. Georgian Bay. Ontario. By E. M. Walker, p. 53–94.
3. The Mollusca of Georgian Bay. By A. D. Robertson. p. 95–111.

4. Rearing experiments and ecology of Georgian Bay Ephemeridae. By W. A. Clemens, p. 113–128.
5. Life-histories of Georgian Bay Ephemeridae of the genus *Heptagenia*. By W. A. Clemens, p. 131–143.
6. The fresh-water Malacostraca of Ontario. By A. G. Huntsman, p. 145–163.
7. Notes on the Hirudinea of Georgian Bay. By C. G. S. Ryerson, p. 165–175.
8. Contributions to the life history of *Proteocephalus ambloplitis* Leidy. A parasite of the black bass. By A. R. Cooper, p. 177–194.
9. Bryozoa of the Georgian Bay region. By H. T. White, p. 195–199.
10. Preliminary report on the plants of Georgian Bay. A contribution to the biology of the Georgian Bay waters. By W. T. MacClement, p. 201–211.
11. List of Georgian Bay fleshy fungi and myxomycetes. By T. H. Bissonnette, p. 213–218.
12. Notes on the aquatic plants of Georgian Bay. By A. B. Klugh, p. 219–220.
13. Entomostraca of Georgian Bay. By G. O. Sars, p. 221–222.

1914–1915 Volume (*published in 1916*)

1. Investigation into the Pacific halibut fisheries, British Columbia. By Arthur Willey, p. 1–18.
2. Notes on the egg and larval stages of the halibut. By Edward E. Prince, p. 19–23.
3. The commercial value of the kelp-beds of the Canadian Pacific coast.—A preliminary report and survey of the beds. By A. T. Cameron, p. 25–39.
4. Lobster sanctuaries and matching ponds: An investigation of the Long Beach lobster pond, Digby County, Nova Scotia, in 1914. By A. P. Knight, p. 41–54.
5. First report on the "barren oyster bottoms" investigation, Richmond Bay, P.E.I. By A. D. Robertson, p. 55–71.
6. A supposed disease of quahaugs from New Brunswick. By Philip Cox, p. 73–79.
7. Investigation of a disease of the herring (*Clupea harengus*) in the Gulf of St. Lawrence, 1914. By Philip Cox, p. 81–85.
8. The life-history of the hake (*Urophycis chuss* Gill) as determined from its scales. By E. Horne Craigie, p. 87–94.
9. Investigation of the haddock fishery, with special reference to the growth and maturity of the haddock (*Melanogrammus aeglefinus*). By Dorothy Duff, p. 95–102.
10. Report on the life history of the cod as determined from the scales and other data. By R. P. Wodehouse, p. 103–113.
11. Are migrating eels deterred by a range of lights? Report on experimental tests. By Philip Cox, p. 115–118.
12. Possible lobster planting areas on the east coast of Vancouver Island, B.C. By C. McLean Fraser, p. 119–132.
13. Variations in density and temperature in the coastal waters of British Columbia—Preliminary notes. By C. McLean Fraser and A. T. Cameron, p. 133–143.
14. An investigation of the bays of the southern coast of New Brunswick with a view to their use for oyster culture. By J. W. Mavor, E. Horne Craigie, and J. D. Detweiler, p. 145–149.
15. Hydrographic investigations in the St. Croix River and Passamaquoddy Bay in 1914. By E. Horne Craigie, p. 151–161.
16. A hydrographic section of the Bay of Fundy in 1914. By E. Horne Craigie, p. 163–167.
17. The water and iodine contents of some Pacific coast kelps. By A. T. Cameron, p. 169–173.

1915–1916 Volume (*published in 1917*)

(English and French editions)

1. The winter plankton in the neighbourhood of St. Andrews, 1914–15. By J. Playfair McMurrich, p. 1–9.
2. Diatoms and lobster rearing. By W. T. MacClement, p. 11–20.
3. On the scales of the spring salmon. By C. McLean Fraser, p. 21–38.
4. On the life-history of the coho. By C. McLean Fraser, p. 39–52.
5. An investigation of oyster propagation in Richmond Bay, P.E.I., during 1915. By Julius Nelson, p. 53–78.
6. The marine Algae of the Passamaquoddy region, New Brunswick. By A. B. Klugh. p. 79–85.
7. On serially striped haddock in New Brunswick. By Edward E. Prince, p. 86–91.
8. Notes on the phyto-plankton of the Bay of Fundy and Passamaquoddy Bay. By L. W. Bailey, p. 93–107.
9. The geological features of the St. Croix River and Passamaquoddy Bay. By L. W. Bailey. p. 109–112.

1917–1918 Volume (*published in 1918*)

1. British Columbia sea-lion investigation. Special Commission's preliminary and main reports, p. 5–52.
2. Lobster investigations at Long Beach Pond, N.S. By A. P. Knight, p. 53–71.
3. The pearly fresh-water mussels of Ontario. By John D. Detweiler, p. 75–91.
4. Notes on the habits and distribution of *Teredo navalis* on the Atlantic coast of Canada. By E. M. Kindle, p. 93–103.
5. Rearing sockeye salmon in fresh water. By C. McLean Fraser, p. 105–109.
6. On the age and growth of the pollock in the Bay of Fundy. By James W. Mavor. p. 111–125.
7. Further hydrographic investigations in the Bay of Fundy. By E. Horne Craigie and W. H. Chase, p. 127–148.
8. Examination of affected salmon, Miramichi hatchery. New Brunswick. By F. C. Harrison. p. 149–168.
9. Report on affected salmon in the Miramichi River. New Brunswick. By A. G. Huntsman. p. 169–173.
10. The smoking of "haddocks" for Canadian markets—an investigation conducted at the Marine Biological Station at St. Andrews, N.B. By Olive Gair Patterson, p. 175–178.
11. Some observations on haddocks and "finnan haddies" relating to the bacteriology of cured fish. By F. C. Harrison, p. 179–180.
12. The bacteriology of swelled canned sardines. By Wilfred Sadler, p. 181–215.
13. Bacterial destruction of copepods occurring in marine plankton. By Wilfred Sadler. p. 217–228.
14. Bathymetric check list of the marine invertebrates of eastern Canada with an index to Whiteaves' catalogue. By E. M. Kindle and E. J. Whittaker, p. 229–294.
15. Hydrography in Passamaquoddy Bay and vicinity. New Brunswick. By Alexander Vachon. p. 295–328.
16. Hydroids of eastern Canada. By C. McLean Fraser, p. 329–369.

1918–1920 Volume (*published in 1921*)

1. Further studies on the growth rate in Pacific salmon. By C. McLean Fraser. p. 7–27.
2. Some apparent effects of severe weather on the marine organisms in the vicinity of Departure Bay, B.C. By C. McLean Fraser, p. 29–33.

3. Temperature and specific gravity variations in the surface waters of Departure Bay, B.C. By C. McLean Fraser, p. 35–48.
4. Plankton diatoms, their distribution and bathymetric range in St. Andrews waters. By Clara W. Fritz, p. 49–62.
5. Experimental cultures of diatoms occurring near St. Andrews, N.B. By Clara W. Fritz, p. 63–68.
6. Contribution to the biology of the muttonfish *Zoarces anguillaris*. By Wilbert A. Clemens and Lucy Smith Clemens, p. 69–83.
7. Eastern Canadian plankton.—The distribution of the Tomopteridae obtained during the Canadian Fisheries Expedition, 1914–15. By A. G. Huntsman, p. 85–91.
8. Eastern Canadian plankton.—The distribution of floating tunicates (Thaliacea) obtained during the Canadian Fisheries Expedition, 1914–15. By A. G. Huntsman, p. 93–97.
9. An investigation into the rate of putrefaction in the commoner food fish caught in and around Passamaquoddy Bay, N.B. By Louis Gross, p. 99–102.
10. Canned sardines.—The cause of "swells" or "blown cans." By Wilfred Sadler, p. 103–108.
11. List of fishes collected in 1917 off the Cape Breton coast and the Magdalen Islands. By Philip Cox, p. 109–114.
12. The diatoms of Canada. By L. W. Bailey and A. H. Mackay, p. 115–124.
13. The utilization of dogfish and selachian fishes of eastern Canada (including Report on analyses of canned grayfish (dogfish) by Emil J. Baumann). By James W. Mavor, p. 125–135.
14. Key to the hydroids of eastern Canada. By C. McLean Fraser, p. 137–180.
15. A new genus and three new species of algae from the Miramichi River, New Brunswick. By A. Brooker Klugh, p. 181–183.
16. The histology of the flexor tendon in the crushing claw of the lobster. By A. P. Knight, p. 185–188.

1921 Volume

Papers No. 1 and 2 (*published in 1921*)

1. Some bacterial organisms occurring in the clam (*Mya arenaria*) which may produce "blackening" in tins. By Jennie L. Symons, p. 1–14.
2. A study of the sea mussel (*Mytilus edulis* Linn). By Bessie K. E. Mossop, p. 15–48.

Papers No. 3–12 (*published in 1922*)

3. The fishes of the Bay of Fundy. By A.G. Huntsman, p. 49–72.
4. A study of the ciscoes of Lake Erie. By Wilbert A. Clemens, p. 73–85.
5. The food of ciscoes (*Leucichthys*) in Lake Erie. By Wilbert A. Clemens and N.K. Bigelow, p. 87–101.
6. The Pacific herring. By C. McLean Fraser, p. 103–111.
7. On the development of the angler (*Lophius piscatorius*, L.). By C. J. Connolly, p. 113–124.
8. The composition of lobster muscle. By Sadie N. Boyd, p. 125–131.
9. Results of the Hudson Bay expedition, 1920. I. The Foraminifera. By Joseph A. Cushman, p. 133–147.
10. Results of the Hudson Bay expedition, 1920. II. The Gasterosteidae. By Philip Cox, p. 149–153.
11. Diatoms from the Quill Lakes, Saskatchewan, and from Airdrie, Alberta (including addendum, by A. H. Mackay). By L. W. Bailey, p. 155–165.
12. List of publications based on results obtained at the Biological Stations of Canada. 1901–1921. Compiled by A. G. Huntsman and C. M. Fraser, p. 167–183.

(b) CONTRIBUTIONS TO CANADIAN BIOLOGY

(New Series)

Abbreviation: C

Volume 1 (1922–1924)

Papers No. 1–9 (*published in 1922*)

1. A study of the lumpfish (*Cyclopterus lumpus* L.). By Philip Cox and Marian Anderson, p. 1–20.
2. Results of the Hudson Bay expedition, 1920. III. The echinoderms. By Austin H. Clark; with addendum by Hubert Lyman Clark, p. 21–25.
3. Results of the Hudson Bay expedition, 1920. IV. The Ascidiacea. By A. G. Huntsman, p. 27–38.
4. Some physical and chemical factors influencing the distribution of marine flora and fauna in the Strait of Georgia and adjacent waters. By A. T. Cameron and Irene Mounce, p. 39–70. The oxygen content of waters in the Strait of Georgia. By C. J. Berkeley, p. 71–72.
5. A note on the relative chlorine, bromine and iodine content in the waters of the Strait of Georgia, B.C. By A. T. Cameron, p. 73–80.
6. The effect of marked changes in specific gravity upon the amount of phytoplankton in Departure Bay waters. By Irene Mounce, p. 81–93.
7. A new Hydractinia and other west coast hydroids. By C. McL. Fraser, p. 95–100.
8. The circulation of the water in the Bay of Fundy. I. Introduction and drift bottle experiments. By James W. Mavor, p. 101–124.
9. The Quill Lakes of Saskatchewan and their fishery possibilities. By A. G. Huntsman, p. 125–141.

Papers No. 10–18 (*published in 1923*)

10. A preliminary list of Bryozoa (Polyzoa) from the Vancouver Island region. By Chas. H. O'Donoghue and Elsie O'Donoghue, p. 143–201.
11. Polychaetous annelids from the Nanaimo district. Part I. Syllidae to Sigalionidae. By Edith Berkeley, p. 203–218.
12. The Hydromedusae of the west coast of North America, with special reference to those of the Vancouver Island region. By R. Earle Foerster, p. 219–277.
13. Rusty herring. By F. C. Harrison, p. 279–284.
14. Ichthyological notes. By C. McLean Fraser, p. 285–295.
15. The freezing of fish — failure and success. By F. Slater Jackson, p. 297–302.
16. Notes on the distribution of free-living Copepoda in Canadian waters. By A. Willey, p. 303–334.
17. The larval stages and megalops of *Cancer amoenus* (Herbst). By C.J. Connolly, p. 335–352.
18. The circulation of the water in the Bay of Fundy. Part II. The distribution of temperature, salinity and density in 1919 and the movements of the water which they indicate in the Bay of Fundy. By James W. Mavor, p. 353–375.

Papers No. 19–25 (*published in 1924*)

19. Marine spore forming bacteria. By Dorothy E. Newton, p. 377–400.
20. Urea in fresh and frozen grayfish. By C. C. Benson, p. 401–407.
21. Larvae of the halibut (*Hippoglossus hippoglossus* L.) on the Atlantic coast of Nova Scotia. By Philip Cox, p. 409–412.
22. The body temperature of fishes. By S. W. Britton, p. 413–418.
23. An annotated list of a collection of fishes made by Francis Harper in the Athabaska region in 1920, to which is appended a list of species collected by Dr. R. T. Morris in the

district between Lake Winnipeg and Hudson Bay in 1905. By William Converse Kendall, p. 419–440.

24. A note on the polychaetous annelid *Eudistylia gigantea* Bush. By Chas. H. O'Donoghue, p. 441–453.
25. On the summer migration of certain starfish in Departure Bay, B.C. By Chas. H. O'Donoghue, p. 455–472.

Volume 2 (1924–1925)

Papers No. 1–14 (*published in 1924*)

1. A bacteriological and chemical study of certain problems in lobster canning. By Guilford B. Reed and D. J. MacLeod, p. 1–29.
2. An annotated catalogue of the diatoms of Canada, showing their geographical distribution. By L. W. Bailey, p. 31–67.
3. Circulation and pollution of water in and near Halifax Harbour. By A. G. Huntsman, p. 69–79.
4. Limiting factors for marine animals. 1. The lethal effect of sunlight. By A. G. Huntsman, p. 81–88.
5. Limiting factors for marine animals. 2. Resistance of larval lobsters to extremes of temperature. By A. G. Huntsman, p. 89–93.
6. Limiting factors for marine animals. 3. Relative resistance to high temperatures. By A. G. Huntsman and M. I. Sparks, p. 95–114.
7. The yields of insulin from fish. By N. A. McCormick and E. C. Noble, p. 115–127.
8. A pathological anomalous thyreoid in the barn-door skate (*Raia laevis*). By W. C. M. Scott, p. 129–134.
9. A quantitative determination of the number of survivors from planting 5,000 trout fry in each of two streams. By H. C. White, p. 135–149.
10. The growth-rate of the scales in the sockeye salmon, *Oncorhynchus nerka*. By H. A. Dunlop, p. 151–160.
11. The life-history of the shad (*Alosa sapidissima* (Wilson)) with special reference to the factors limiting its abundance. By A. H. Leim, p. 161–284.
12. Polychaetous annelids from the Nanaimo district. Part 2. Phyllodocidae to Nereidae. By Edith Berkeley, p. 285–293.
13. The distribution of certain marine Ostracoda in the Canadian waters of the eastern coast. By Viola M. Davidson, p. 295–306.
14. The gribble: a study of the distribution factors and life-history of *Limmoria lignorum* at St. Andrews, N.B. By Jean T. Henderson, p. 307–325.

Papers No. 15–22 (*published in 1925*)

15. The larval stages and megalops of *Rhithropanopeus harrisi* (Gould). By C. J. Connolly, p. 327–334.
16. Studies in the ecology of the sockeye salmon (*Oncorhynchus nerka*). By R. Earle Foerster. p. 335–422.
17. Natural history of the cunner (*Tautogolabrus adspersus* Walbaum). By Frits Johansen, p. 423–467.
18. A review of the Cirripedia of the coast of British Columbia, with glossary and key to genera and species. By Ira E. Cornwall, p. 469–502.
19. A note on the organic constitution of Pacific coast kelps. By C. Berkeley, p. 503–506.
20. Rhizopoda and Heliozoa from British Columbia. By G. H. Wailes, p. 507–518.
21. Desmidicae from British Columbia. By G. H. Wailes, p. 519–530.
22. Tintinnidae from the Strait of Georgia, B.C. By G. H. Wailes. p. 531–539.

(c) CONTRIBUTIONS TO CANADIAN BIOLOGY AND FISHERIES (NEW SERIES)

Abbreviation: C

Volume 3 (1926–1927)

Papers No. 1–8 (*published in 1926*)

1. Results of the Hudson Bay Expedition in 1920. V. Report on the marine amphipods collected in Hudson and James Bays by Frits Johansen in the summer of 1920. By Clarence R. Shoemaker, p. 1–11.
2. The Isopoda of Departure Bay and vicinity with descriptions of new species, variations and colour notes. By A. R. Fee, p. 13–46.
3. A second list of the Bryozoa (Polyzoa) from the Vancouver Island region. By Chas. H. O'Donoghue and Elsie O'Donoghue, p. 47–131.
4. Contributions to the study of marine gastropods. I. The physical factors, behaviour, and intertidal life of *Littorina*. By J. Nelson Gowanloch and F. Ronald Hayes, p. 133–165.
5. Contributions to the study of marine gastropods. II. The intertidal life of *Buccinum undatum*, a study in non-adaptation. By J. Nelson Gowanloch, p. 167–177.
6. Entomostraca of the Belle Isle Strait Expedition, 1923, with notes on other planktonic species. Part I. By Kathleen F. Pinhey, p. 179–233.
7. Description of a copepod gill-parasite of pike-perches in lakes of northern Quebec, including an account of the free-swimming male and of some developmental stages. By Jean T. Henderson, p. 235–245.
8. Observations on the early development of *Membranipora villosa* Hincks. By Chas. H. O'Donoghue, p. 247–263.

Papers No. 9–11 (*published in 1927*)

9. Pacific salmon migration: Report on the tagging operations in 1925. By H. Chas. Williamson, p. 265–306.
10. Biological studies of fishery statistics. By A.W.H. Needler, p. 307–315.
11. A preliminary list of the ophiurans of the Nanaimo district. By Alfreda Berkeley, p. 317–322.

Papers No. 12–23 (*published in 1927*)

12. The hydroids of the Cheticamp Expedition of 1917. By C. McLean Fraser, p. 323–329.
13. Entomostraca of the Belle Isle Strait Expedition, 1923, with notes on other planktonic species: Part II; and a record of other collections in the region. By Kathleen F. Pinhey, p. 331–346.
14. Bacteria concerned in the spoilage of haddock; preliminary paper. By A. H. Gee, p. 347–363.
15. A preliminary report on trout investigations in Forbes Brook in 1925 and 1926. By H. C. White, p. 365–376.
16. Reports of the Jasper Park Lakes Investigations, 1925–26. I. The fishes. By A. Bajkov, p. 377–404.
17. Polychaetous annelids from the Nanaimo district. Part 3. Leodicidae to Spionidae. By Edith Berkeley, p. 405–422.
18. Fluctuations in the haddock fishery of the Bay of Fundy. By A.G. Huntsman and A.W.H. Needler, p. 423–436.
19. The immediate post mortem changes in fish muscle. By J. J. R. Macleod and W. W. Simpson, p. 437–456.
20. The relationship between rigor mortis and the glycogen, lactic acid and free phosphorus of fish muscle. By A. H. Leim, J. J. R. Macleod, and W. W. Simpson, p. 457–466.

21. The effect of various treatments on the tensile strength of fish muscle. By J.C. Forbes, p. 467–487.
22. Sex-ratio in Canadian marine fishes. By E. Horne Craigie, p. 489–500.
23. Some north Pacific whale barnacles. By Ira E. Cornwall, p. 501–517.

Volume 4 (1929)

Papers No. 1-11 (*published in 1929*)

1. Studies on marine wood borers. I. The toxicity of various substances on *Limnoria lignorum*. By F. D. White, p. 1–8.
2. Studies on marine wood borers. II. The effect of the experimental variations in salinity and hydrogen ion concentration upon the wood borers of the Pacific coast of Canada. By F.D. White, p. 9–18.
3. Studies on marine wood borers. III. A note on the breeding season of *Bankia* (*Xylotrya*) *setacea* in Departure Bay, B.C. By F. D. White, p. 19–26.
4. The bactericidal action of smoke (as used in the smoke-curing of fish). By Ernest Hess, p. 27–76.
5. Notes on Canadian Rotifera. By L. W. Koch, p. 77–80.
6. Conditions affecting the growth of the soft shell clam, *Mya arenaria* L. By Margaret H. Wilton and Helen I. Wilton, p. 81–93.
7. The decomposition of clam muscle in acid solutions. By Christine E. Rice, p. 95–105.
8. The nutritional physiology of Cladocera. By G.P. Rankin, p. 107–113.
9. The iodine content of the thyroid of two species of elasmobranchs and one species of teleost. By Frances M. Burwash, p. 115–120.
10. Growth of the sea mussel. By H. S. Coulthard, p. 121–136.
11. A note on the effect of temperature and salinity on the hatching of the eggs of the winter flounder (*Pseudopleuronectes americanus* Walbaum). By W.C.M. Scott, p. 137–141.

Papers No. 12–17 (*published in 1929*)

12. The validity of *Lophius americanus* Val., as a species distinct from *L. piscatorius* Linn., with notes on the rate of development. By N. J. Berrill, p. 143–155.
13. Reports of the Jasper Park lakes investigations, 1925–26. II. Plecoptera. By Ferris Neave, p. 157–173.
14. Reports of the Jasper Park lakes investigations, 1925–26. III. The leeches. By R. Bere, p. 175–183.
15. Reports of the Jasper Park lakes investigations, 1925–26. IV. Aquatic insects. By Ferris Neave, p. 185–195.
16. Reports of the Jasper Park lakes investigations, 1925–26. V. Food and growth of Jasper Park fishes. By F. Neave and A. Bajkov, p. 197–219.
17. Reports of the Jasper Park lakes investigations. 1925–26. VI. The beetles. By J. B. Wallis, p. 221–225.

Papers No. 18–20 (*published in 1929*)

18. A comparative study of autolysis and bacterial decomposition in haddock, lobster and clam muscle. By Guilford B. Reed, Christine E. Rice, and R. J. Sinclair, p. 227–255.
19. The intestinal and slime flora of the haddock. A preliminary report. By Guilford B. Reed and C. Marion Spence, p. 257–264.
20. Studies on the life history of the haddock (*Melanogrammus aeglifinus* Linnaeus). By A. W. H. Needler, p. 265–285.

Papers No. 21–24 (*published in 1929*)

21. Factors involved in the production of annual zones in the scales of the cod (*Gadus callarias* Linnaeus). By G. Lyman Duff, p. 287–303.
22. Polychaetous annelids from the Nanaimo district. Part 4. Chaetopteridae to Maldanidae. By Edith Berkeley, p. 305–316.
23. The tryptic hydrolysis of haddock muscle. Preliminary paper. By Arthur M. Wynne, p. 317–341.
24. Reports of the Jasper Park lakes investigations, 1925–26. VII. A study of the plankton. By Alexander Bajkov, p. 343–396.

Papers No. 25–29 (*published in 1929*)

25. Lethal temperatures of Lamellibranchiata. By Jean T. Henderson, p. 397–411.
26. Contributions to the study of marine gastropods. III. Development, growth and behaviour of *Littorina*. By F. Ronald Hayes, p. 413–430.
27. The distribution and development of the cunner (*Tautogolabrus adspersus* Walbaum) along the eastern coast of Canada. By Margaret E. Reid, p. 431–441.
28. The spawning and development of mackerel on the outer coast of Nova Scotia. By M. Irving Sparks, p. 443–452.
29. Pacific salmon migration: Report on the tagging operations in 1926, with additional returns from the operations of 1925. By H. Chas. Williamson, p. 453–470.

Papers No. 30–33 (*published in 1929*)

30. Pacific salmon migration: Report on the study of the scales of the spring salmon, *Oncorhynchus tschawytscha*, tagged in 1926 and 1927 off the west coast of Vancouver Island. By Charles McC. Mottley, p. 471–494.
31. A note on lethal temperature in connection with skate reflexes. By Helen I. Battle. p. 495–500.
32. Temperature coefficients for the rate of death of the muscle in *Raja erinacea* (Mitchill) at high temperatures. By Helen I. Battle, p. 501–526.
33. Notes on the distribution of free-living Copepoda in Canadian waters. Part II. Some intertidal harpacticoids from St. Andrews, New Brunswick. By Arthur Willey, p. 527–539.

Volume 5 (1929–1930)

Papers No. 1–5 (*published in 1929*)

1. An investigation of the life history and propagation of the sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. I. Introduction and the run of 1925. By R. E. Foerster, p. 1–35.
2. An investigation of the life history and propagation of the sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. II. The run of 1926. By R. E. Foerster, p. 37–53.
3. An investigation of the life history and propagation of the sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. III. The downstream migration of the young in 1926 and 1927. By R. E. Foerster, p. 55–82.
4. The action of light on *Calanus finmarchicus* (Gunner) as determined by its effect on the heart rate. By J. M. Harvey, p. 83–92.
5. The amount of "dry meat" in canned lobster in relation to exhausting and to the age of the can. By E. Hess, p. 93–105.

Paper No. 6 (*published in 1929*)

6. Effects of extreme temperatures and salinities on the development of *Enchelyopus cimbrius* (L.). By Helen I. Battle, p. 107–192.

Papers No. 7–10 (part) (*published in 1930*)

7. A physiological study of certain parasitic Saprolegniaceae. By D. C. B. Duff, p. 193–202.
8. Trout fry planting experiments in Forbes brook, P.E.I., in 1928. By H. C. White, p. 203–211.
9. A barnacle (*Scalpellum columbianum*) from Departure Bay, B.C. By Ira E. Cornwall, p. 213–217.

Papers No. 10 (cont.)–12 (*published in 1930*)

10. The Amphipoda of the Cheticamp Expedition of 1917. By Clarence R. Shoemaker, p. 219–359.
11. Spawning periodicity and embryonic death rate of *Enchelyopus cimbrius* (L.) in Passamaquoddy Bay. By Helen I. Battle, p. 361–380.
12. Biological conditions of Manitoban lakes. By Alexander Bajkov, p. 381–422.

Papers No. 13–18 (*published in 1930*)

13. The parasitic copepods of the fish of the Passamaquoddy region. By Ruby Bere, p. 423–430.
14. Bacteria concerned in the spoilage of haddock. III. Further observations on the flora of live fish. By A.H. Gee, p. 431–439.
15. A study of the whitefish (*Coregonus clupeaformis*) in Manitoban lakes. By Alexander Bajkov, p. 441–455.
16. A study of *Eupomotis gibbosus* (L.) as occurring in the Chamcook lakes, N.B. By Helen Reid, p. 457–466.
17. Some ciscoes or lake herrings of western Canada. By J.R. Dymond and A.L. Pritchard, p. 467–474.
18. The changes in the blood concentration of *Raja erinacea* produced by modification of the salinity of the external medium. By A.F. Chaisson, p. 475–484.

Volume 6 (1930–1931)

Papers No. 1–6 (part) (*published in 1930*)

1. The soluble proteins of the muscle tissue of the haddock. By J. F. Logan, p. 1–11.
2. Symbiosis of *Beroe* and a flagellate. By C. Berkeley, p. 13–21.
3. Some Cumacea of the Vancouver Island region. By Josephine F. L. Hart, p. 23–40.
4. Studies on the photosynthesis of marine algae. No. 1: Photosynthetic rates of *Enteromorpha linza, Porphyra umbilicalis,* and *Delesseria sinuosa* in red, green and blue light. By A. Brooker Klugh, p. 41–63.
5. Polychaetous annelids from the Nanaimo district. Part 5. Ammocharidae to Myzostomidae, with an appendix on some pelagic forms from the Strait of Georgia and the west coast of Vancouver Island. By Edith Berkeley, p. 65–77.

Papers No. 6 (cont.)–7 (*published in 1930*)

6. The post-embryonic development of the common pandalids of British Columbia. By Alfreda A. Berkeley, p. 79–163.
7. The spawning and early life history of the whitefish, *Coregonus clupeaformis* (Mitchill), in the Bay of Quinte, Ontario. By John Lawson Hart, p. 165–214.

Papers No. 8–10 (*published in 1930*)

8. A new parasitic copepod (*Scolecimorpha huntsmani* n. sp.). By Jean T. Henderson, p. 215–224.
9. Spawning habits and fry of the cisco (*Leucichthys artedi*) in Lake Ontario. By Andrew L. Pritchard, p. 225–240.
10. The migrations of haddock and the interrelationships of haddock populations in North American waters. By A.W.H. Needler, p. 241–313.

Series B. Experimental, papers No. 1 and 2 (No. 11–12) (*published in 1931*)

11. Studies on the respiratory mechanism in skates. By B. P. Babkin and R. H. M'Gonigle. p. 315–339.
12. The occurrence of creatine in the muscle, blood, and urine of the dogfish, *Squalus sucklii*. By F. D. White, p. 341–354.

Series C. Industrial, papers No. 1–3 (No. 13–15) (*published in 1931*)

13. The nutritive value of marine products. IV. A note on the vitamin A content of commercial pilchard oil. By D. B. Finn, p. 355–363.
14. Apparatus for drying-oil research. By H. N. Brocklesby and O. F. Denstedt, p. 365–374.
15. Thermal investigations of fish muscle. By G. O. Langstroth, p. 375–389.

Series A. General, papers No. 1–11 (No. 16–26) (*published in 1931*)

16. Description of two new forms of British Columbia trout. By J. R. Dymond, p. 391–395.
17. Some Ostracoda of the Vancouver Island region. By Verna Z. Lucas, p. 397–416.
18. A deep sea bacteriological water bottle. By O. C. Young, D. B. Finn, and R. H. Bedford. p. 417–422.
19. The bactericidal effect of the "Prince Rupert" sea water sampling bottle. By Robert H. Bedford, p. 423–426.
20. The growth of the whitefish, *Coregonus clupeaformis* (Mitchill). By John Lawson Hart. p. 427–444.
21. The food of the whitefish, *Coregonus clupeaformis* (Mitchill) in Ontario waters, with a note on the parasites. By John Lawson Hart, p. 445–454.
22. Biological and oceanographic conditions in Hudson Bay. 1. Hudson Bay and the determination of fisheries. By A. G. Huntsman, p. 455–462.
23. Biological and oceanographic conditions in Hudson Bay. 2. Report on the Hudson Bay Fisheries Expedition of 1930. A. Open water investigations with the S.S. *Loubyrne*. By H. B. Hachey. B. Investigations at Churchill, Manitoba. By S. J. Walker, p. 463–474.
24. Biological and oceanographic conditions in Hudson Bay. 3. Hydroids of Hudson Bay and Hudson Strait. By C. McLean Fraser, p. 475–481.
25. Biological and oceanographic conditions in Hudson Bay. 4. Hudson Bay copepod plankton. By A. Willey, p. 483–493.
26. Biological and oceanographic conditions in Hudson Bay. 5. The planktonic diatoms in Hudson Bay. By V. M. Davidson, p. 495–509.

Volume 7 (1931–1933)

Series B. Experimental, papers No. 3–9 (No. 1–7) (*published in 1931*)

1. Further studies on the pancreatic secretion in the skate. By B. P. Babkin, p. 1–9.
2. Note on the urea content of the gastric juice in the skate. By B. P. Babkin and S. A. Komarov, p. 11–15.
3. The action of some hormones and hormone-like substances on the circulation in the skate. By Margaret E. MacKay, p. 17–29.
4. The effect of certain hormone-like substances on the isolated heart of the skate. By M. Elinor Huntsman, p. 31–43.
5. The influence of temperature on digestion in *Fundulus heteroclitus*. By John V. V. Nicholls, p. 45–55.
6. Comparative study of gastric secretion in the dog after ingestion of haddock flesh and skin and of beef meat. By S. A. Komarov, p. 57–65.
7. The toxicity of fresh water on *Pseudopleuronectes americanus* (Walbaum). By A. F. Chaisson. p. 67–72.

Series D. Hydrographic, papers No. 1–4 (No. 8–11) (*published in 1931*)

8. The spectral absorption of light by pure water and Bay of Fundy water. By William Reginald Sawyer, p. 73–89.
9. Biological and oceanographic conditions in Hudson Bay. 6. The general hydrography and hydrodynamics of the waters of the Hudson Bay region. By H. B. Hachey, p. 91–118.
10. On the colorimetric estimation of silica. By Earl J. King, p. 119–125.
11. On the occurrence of silica in the waters of the Passamaquoddy Bay region. By Hazel M. King, p. 127–137.

Series C. Industrial, papers No. 4–6 (No. 12–14) (*published in 1932*)

12. The viability of the bacterium *Pseudomonas fluorescens* in aqueous solutions of formaldehyde. By Robert H. Bedford, p. 139–146.
13. The influence of low temperatures above freezing upon the rate of autolytic and bacterial decomposition of haddock muscle. By Ernest Hess, p. 147–163.
14. Fish glue from fish waste. I. Preparation by dialysis. By L. F. Smith, p. 165–176.

Series A. General, papers No. 12–20 (No. 15–23) (*published in 1932*)

15. A study of the May flies (*Hexagenia*) of Lake Winnipeg. By Ferris Neave, p. 177–201.
16. Fishes observed in the Strait of Belle Isle. By G. W. Jeffers, p. 203–211.
17. Description of new species of Protozoa from British Columbia. By G. H. Wailes, p. 213–219.
18. The Cestoda of Canadian fishes. I. The Pacific coast region. By Robert Arnold Wardle, p. 221–243.
19. The food of the pilchard, *Sardinops caerulea* (Girard), off the coast of British Columbia. By John Lawson Hart and George Herbert Wailes, p. 245–254.
20. Rhythmic sexual maturity and spawning of certain bivalve mollusks. By Helen I. Battle, p. 255–276.
21. *Haplobranchus atlanticus*, a new species of polychaetous annelid from St. Andrews, N.B. By A. L. Treadwell, p. 277–281.
22. Sex reversal in *Ostrea virginica*. By Alfreda Berkeley Needler, p. 283–294.
23. Mud deposits on gill nets in the Nass River district, British Columbia. By W. H. Martin. p. 295–308.

Series A. General, papers No. 21–27 (No. 24–30) (*published in 1932*)

24. On a collection of littoral Polychaeta from the west coast of Vancouver Island. By E. and C. Berkeley, p. 309–318.
25. A new blenny from British Columbia with records of two other fishes new to the region. By Carl L. Hubbs and Leonard P. Schultz, p. 319–324.
26. The genus *Leucichthys* (ciscoes or tullibees) in Manitoban waters. By A. Bajkov. p. 325–333.
27. Description of a new species of crab of the genus *Paralithodes*. By Donald C. G. MacKay. p. 335–340.
28. The biology of *Triaenophorus tricuspidatus* (Bloch 1779), in Western Canada. By Merlin V. B. Newton, p. 341–360.
29. Biological and oceanographic conditions in Hudson Bay. 7. Bryozoa from Hudson Bay and Strait. By Raymond C. Osburn, p. 361–376.
30. The Cestoda of Canadian fishes. II. The Hudson Bay drainage system. By Robert Arnold Wardle, p. 377–403.

Series C. Industrial, papers No. 7–10 (No. 31–34) *(published in 1933)*

31. The nutritive value of marine products. V. The vitamin A content of ling cod liver oil. Preliminary note. By B. E. Bailey, p. 405–412.
32. Studies in fish oils. 2. The decolorization of pilchard oil. By H. N. Brocklesby and L. P. Moore, p. 413–424.
33. The discolouration of halibut by marine chromogenic bacteria at 0°C. By Robert H. Bedford, p. 425–430.
34. Marine bacteria of the northern Pacific ocean. The temperature range of growth. By Robert H. Bedford, p. 431–438.

Series B. Experimental, papers No. 10–13 (No. 35–38) *(published in 1933)*

35. Some physiological effects of extractive substances in skate's skin. By Margaret E. MacKay-Sawyer and S. A. Komarov, p. 439–446.
36. The effect of temperature variations and of certain drugs upon the gastric motility of elasmobranch fishes. By John V. V. Nicholls, p. 447–463.
37. Reactions of fish to noise. By V. H. K. Moorhouse, p. 465–475.
38. A mechanism controlling movements of the spiral intestine in elasmobranchs. By Margaret E. Sawyer, p. 477–494.

Series C. Industrial, papers No. 11–13 (No. 39–41) *(published in 1933)*

39. A jacketed cold storage room. By O.C. Young, p. 495–504.
40. The hydrolysis of the body oil of the salmon. By H. N. Brocklesby, p. 505–519.
41. Studies in fish oils. 3. Some observations on the hydrogenation of pilchard oil. By H. N. Brocklesby and F. Charnley, p. 521–535.

Volume 8 (1933–1934)

Series A. General, papers No. 28–35 (No. 1–8) *(published in 1933)*

1. Biological and oceanographic conditions in Hudson Bay. 8. The coregonine fishes of Hudson and James Bays. By J. R. Dymond, p. 1–12.
2. Biological and oceanographic conditions in Hudson Bay. 9. Fishes from the Hudson Bay region (except the Coregonidae). By Vadim D. Vladykov, p. 13–61.
3. Biological and oceanographic conditions in Hudson Bay. 10. Marine algae from Hudson Bay. By Hugh P. Bell and Constance MacFarlane, p. 63–69.
4. *Philonema oncorhynchi*, nov. gen. et spec. By E. Kuitunen-Ekbaum, p. 71–75.
5. The Cestoda of Canadian fishes. III. Additions to the Pacific coastal fauna. By Robert Arnold Wardle, p. 77–87.
6. A study of the Cestode genus *Eubothrium* of Nybelin in Canadian fishes. By E. Kuitunen-Ekbaum, p. 89–98.
7. *Citharichthys stigmaeus* as a possible intermediate host of *Gilquinia squali* (Fabricius). By E. Kuitunen-Ekbaum, p. 99–101.
8. Studies on furunculosis of fish in British Columbia. By D. C. B. Duff and Beatrice J. Stewart, p. 103–122.

Series B. Experimental, papers No. 14–17 (No. 9–12) *(published in 1933)*

9. The partition of non-protein nitrogen in haddock's muscle. By S. A. Komarov, p. 123–130.
10. Note on the partition of non-protein nitrogen in autolysed haddock's muscle. By S. A. Komarov, p. 131–135.
11. The survival time of tissue kept at various temperatures. By J. V. V. Nicholls, p. 137–143.
12. The effect of temperature variations and of certain drugs upon the intestinal motility of elasmobranch fishes. By J. V. V. Nicholls, p. 145–160.

Series A. General, papers No. 36–38 (No. 13–15) (*published in 1933*)

13. A case of dracontiasis in Pacific coastal fishes. By E. Kuitunen-Ekbaum, p. 161–168.
14. Nematode parasites from Canadian marine and freshwater fishes. By Enid Mary Smedley, p. 169–179.
15. Euphausiacea and Mysidacea from western Canada. By W. M. Tattersall, p. 181–205.

Series B. Experimental, papers No. 18–19 (No. 16–17) (*published in 1933*)

16. Structure and reactions to stimuli of arteries (and conus) in the elasmobranch genus *Raja*. By B. P. Babkin, D. J. Bowie, and J. V. V. Nicholls, p. 207–225.
17. The effect of certain sea-foods (haddock, cod, mackerel and lobster) on gastric secretion. By Armine Alley, p. 227–236.

Series A. General, papers No. 39–41 (No. 18–20) (*published in 1934*)

18. Larvae of some British Columbia Hippolytidae. By Alfreda Berkeley Needler, p. 237–242.
19. The fresh-water amphipods of Vancouver Island. By L. G. Saunders, p. 243–251.
20. The effect of temperature during development on the number of scales in the Kamloops trout, *Salmo kamloops* Jordan. By C. McC. Mottley, p. 253–263.

Series C. Industrial, papers No. 14–19 (No. 21–26) (*published in 1934*)

21. The nutritive value of marine products. VI. The vitamin A potency of salmon liver oil. By B. E. Bailey, p. 265–274.
22. The slime and intestinal flora of some marine fishes. By Norman E. Gibbons, p. 275–290.
23. Lactose-fermenting bacteria from the intestinal contents of marine fish. By Norman E. Gibbons, p. 291–300.
24. A bacteriological study of "ice fillets." By Norman E. Gibbons, p. 301–310.
25. The denaturation of fish muscle proteins by freezing. By D. B. Finn, p. 311–320.
26. Fish oils. 4. The bodying of pilchard oil. By H. N. Brocklesby and O. F. Denstedt, p. 321–343.

Series A. General, papers No. 42–46 (No. 27–31) (*published in 1934*)

27. An investigation of the life history and propagation of the sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. No. 4. The life history cycle of the 1925 year class with natural propagation. By R. E. Foerster, p. 345–355.
28. Fluctuations in the abundance of planktonic diatoms in the Passamaquoddy region, New Brunswick, from 1924 to 1931. By Viola M. Davidson, p. 357–407.
29. Young haddock in the vicinity of Halifax, N.S. By V. D. Vladykov, p. 409–419.
30. Mating in the American lobster. By W. Templeman, p. 421–432.
31. Cod movements on the Canadian Atlantic coast. By R. A. McKenzie, p. 433–458.

Series C. Industrial, papers No. 20–24 (No. 32–36) (*published in 1934*)

32. Cultural characteristics of marine bacteria in relation to low temperatures and freezing. By Ernest Hess, p. 459–474.
33. The relation between coil area, temperature of cooling medium and dehydration in a cold storage room. By O. C. Young, p. 475–487.
34. Effects of low temperatures on the growth of marine bacteria. By Ernest Hess, p. 489–505.
35. Calculations in the investigation of oils and fats with special reference to fish oils. Part I. By F. Charnley, p. 507–529.
36. The preparation of an artificial horn from fish muscle (preliminary communication). By W.W. Johnston and S.A. Beatty, p. 531–542.

The series Contributions to Canadian Biology and Fisheries was concluded, and replaced by the Journal of the Biological Board of Canada.

2. JOURNAL

(a) JOURNAL OF THE BIOLOGICAL BOARD OF CANADA

Abbreviation: J

Volume 1 (1934–1935)

Issue No. 1 (*published in 1934*)

The life history and post embryonic development of the copepods, *Calanus tonsus* Brady, and *Euchaeta japonica* Marukawa. By Mildred H. Campbell, p. 1–65.

Physical and biological conditions in heavily fertilized water. By M. W. Smith, p. 67–93.

Issue No. 2 (*published in 1935*)

The effects of freezing on marine bacteria. I. Quantitative studies. By Ernest Hess, p. 95–108.

Effect of temperature on the cell length and shape of *Bacillus vulgatus*. By Ernest Hess. p. 109–119.

The replacement of Bay of Fundy waters. By H.B. Hachey, p. 121–131.

Movements resulting from mixing of stratified waters. By H. B. Hachey, p. 133–143.

Issue No. 3 (*published in 1935*)

Digestion and digestive enzymes in the herring (*Clupea harengus* L.). By Helen I. Battle. p. 145–157.

Ages at migration of Atlantic salmon (*Salmo salar*) in Miramichi River. By A. A. Blair. p. 159–169.

Tidal mixing in an estuary. By H. B. Hachey, p. 171–178.

The non-protein nitrogenous constituents of fish and lobster muscle. By James Campbell. p. 179–189.

The growth of the Pacific edible crab, *Cancer magister* Dana. By Donald C.G. MacKay and Frank W. Weymouth, p. 191–212.

Local differences in the body proportions of the lobster, *Homarus americanus*. By W. Templeman, p. 213–226.

Issue No. 4 (*published in 1935*)

The effect of a storm on an inshore area with markedly stratified waters. By H. B. Hachey. p. 227–237.

Vagal and sympathetic innervation of the stomach in the skate. By B. P. Babkin. M. H. F. Friedman, and M. E. MacKay-Sawyer, p. 239–250.

Factors determining the course of the gastric secretion in elasmobranchs. By B. P. Babkin. A. F. Chaisson, and M. H. F. Friedman, p. 251–259.

The function of the claspers and clasper-glands in the skate. By M. H. F. Friedman. p. 261–268.

Lobster tagging in the Gulf of St. Lawrence. By W. Templeman, p. 269–278.

Issue No. 5 (*published in 1935*)

A quantitative study of the phytoplankton in the Bay of Fundy and the Gulf of Maine (including observations on hydrography, chemistry and turbidity). By H. H. Gran and Trygve Braarud, p. 279–467.

Issue No. 6 (*published in 1935*)

On the nervous system of four British Columbian barnacles (one new species). By I. E. Cornwall, p. 469–475.

Food of *Clupea pallasii* in southern British Columbia waters. By G. H. Wailes. p. 477–486.

Fish oils. V. The effect of various treatments on the rate of oxidation of pilchard oil. By O. F. Denstedt and H. N. Brocklesby, p. 487–496.

The secretion of urea and chloride by the elasmobranch stomach. By F. C. MacIntosh, p. 497–501.

Hydroids from the Queen Charlotte Islands. By C. McLean Fraser, p. 503–507.

Volume 2 (1936)

Issue No. 1 (*published in 1936*)

The reduced strychnine method for determining nitrates in sea water. By William A. Riddell, p. 1–11.

Fish oils. VI. The structure and properties of pilchard oil films. By O. F. Denstedt and H. N. Brocklesby, p. 13–40.

Local differences in the life history of the lobster (*Homarus americanus*) on the coast of the Maritime provinces of Canada. By W. Templeman, p. 41–88.

An ecological study of the sea mussel (*Mytilus edulis* Linn.). By A. Emerson Warren, p. 89–94.

Issue No. 2 (*published in 1936*)

Investigations of the herring of Passamaquoddy and adjacent regions. By Michael Graham, p. 95–140.

Mixing and residual currents in tidal waters as illustrated in the Bay of Fundy. By E. E. Watson, p. 141–208.

The life-history and morphology of *Chironomus hyperboreus*. By J. G. Rempel, p. 209–221.

Further contributions to mating in the American lobster. By W. Templeman, p. 223–226.

Issue No. 3 (*published in 1936*)

Physical and chemical studies in lakes of the Prince Albert park, Saskatchewan. By D. S. Rawson, p. 227–284.

Calculations in the investigation of oils and fats with special reference to fish oils. Part II. By F. Charnley, p. 285–297.

The food of kingfishers and mergansers on the Margaree River, Nova Scotia. By H. C. White, p. 299–309.

An investigation of the life history and propagation of the sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. No. 5. The life history cycle of the 1926 year class with artificial propagation involving the liberation of free-swimming fry. By R. E. Foerster, p. 311–333.

Issue No. 4 (*published in 1936*)

A study of the endoparasitic trematodes from marine fishes of Departure Bay, B.C. By S. Hanford McFarlane, p. 335–347.

Fourth stage larvae of *Homarus americanus* intermediate in form between normal third and fourth stages. By W. Templeman, p. 349–354.

Argulus canadensis from Cape Breton Island. By C. B. Wilson, p. 355–358.

A biometrical study of the Kamloops trout of Kootenay Lake, *Salmo kamloops* Jordan. By C. McC. Mottley, p. 359–377.

Age determinations of salmon parr by effect of rate of growth on body proportions. By H. C. White, p. 379–382.

Factors influencing the upstream spawning migration of the pink salmon, *Oncorhynchus gorbuscha* (Walbaum). By A. L. Pritchard, p. 383–389.

The homing of salmon in Apple River, N.S. By H. C. White, p. 391–400.

Fatness, digestion and food of Passamaquoddy young herring. By Helen I. Battle, A. G. Huntsman, Anne M. Jeffers, G. W. Jeffers, W. H. Johnson, and N. A. McNairn, p. 401–429.

Issue No. 5 (*published in 1936*)

The nutritive value of marine products. VII. The vitamin A and D potency of the oils from British Columbia canned salmon. By Basil E. Bailey, p. 431–437.

The nutritive value of marine products. VIII. Proximate analysis of canned British Columbia sockeye and pink salmon. By Neal M. Carter, p. 439–455.

The nutritive value of marine products. IX. Proximate analysis of British Columbia canned pilchard. By F.D. White, p. 457–460.

The nutritive value of marine products. X. Proximate analysis of ling cod. By F.D. White, p. 461–462.

The nutritive value of marine products. XI. Proximate analysis of canned British Columbia coho (blueback) salmon. By W.A. Riddell, p. 463–468.

The nutritive value of marine products. XII. Mineral constituents of some food fishes of British Columbia. By W.A. Riddell, p. 469–472.

The nutritive value of marine products. XIII. Mineral constituents of the flesh, skin, bone and free liquor in canned British Columbia coho (blueback) salmon. By W.A. Riddell, p. 473–475.

The nutritive value of marine products. XIV. Proximate analyses of fresh British Columbia oysters. By John P. Tully, p. 477–484.

The influence of temperature, salinity, light, and food conditions on the survival and growth of the larvae of the lobster (*Homarus americanus*). By W. Templeman, p. 485–497.

The food of salmon fry in eastern Canada. By H.C. White, p. 499–506.

Volume 3 (1936–1937)

Issue No. 1 (*published in 1936*)

The preparation of fresh fillets of fish for smoking. By D. LeB. Cooper and E. P. Linton, p. 1–11.

Observations on some Pacific diatoms as the food of copepods and fishes. By Charles W. Lowe, p. 12–19.

Food of the coarse-scaled sucker (*Catostomus macrocheilus* Girard). By G. Clifford Carl, p. 20–25.

The return from the sea of sockeye salmon (*Oncorhynchus nerka*) with special reference to percentage survival, sex proportions and progress of migration. By R.E. Foerster, p. 26–42.

Oceanography of Nootka Sound. By John P. Tully, p. 43–69.

Studies on salt fish. 1. Bacteria associated with the reddening of salt fish. By N.E. Gibbons, p. 70–76.

The measurement of spoilage in fish. By S.A. Beatty and N. E. Gibbons, p. 77–91.

Issue No. 2 (*published in 1937*)

A procedure for increasing the accuracy of surface current charts based on hydrodynamic observations. By John P. Tully, p. 93–99.

The application of thermal data to the calculation of sterilizing times for canned fish. By D. LeB. Cooper, p. 100–107.

Populations of herring (*Clupea pallasii*) in the coastal waters of British Columbia. By Albert L. Tester, p. 108–144.

The length and age composition of the herring (*Clupea pallasii*) in the coastal waters of British Columbia. By Albert L. Tester, p. 145–168.

The number of vertebrae in trout (*Salmo*). By C. McC. Mottley, p. 169–176.

Dissolved nitrogenous materials in the effluent of pilchard reduction plants. By Desmond Beall, p. 177–179.

Issue No. 3 (*published in 1937*)

The biology of the zooplankton population in the Bay of Fundy and Gulf of Maine with special reference to production and distribution. By Charles J. Fish and Martin W. Johnson, p. 189–322.

Issue No. 4 (*published in 1937*)

Local feeding of kingfishers and mergansers. By H. C. White, p. 323–338.

Egg-laying and hatching postures and habits of the American lobster (*Homarus americanus*). By W. Templeman, p. 339–342.

Habits and distribution of larval lobsters (*Homarus americanus*). By W. Templeman, p. 343–347.

Hemipodia canadensis a new polychaetous annelid from Nova Scotia. By Aaron L. Treadwell, p. 348–349.

Biological and oceanographical conditions in Hudson Bay. 11. Echinoderms of Hudson Bay. By Austin H. Clark, p. 350–357.

A shell disease in lobsters (*Homarus americanus*) caused by chitinovorous bacteria. By Ernest Hess, p. 358–362.

Physical and chemical characteristics of Cultus Lake, British Columbia. By William E. Ricker, p. 362–402.

Issue No. 5 (*published in 1937*)

Variation in the time of run, sex proportions, size and egg content of adult pink salmon (*Oncorhynchus gorbuscha*) at McClinton Creek, Masset Inlet, B.C. By A.L. Pritchard, p. 403–416.

Sexual dimorphism in vertebral number in the capelin *Mallotus villosus* (Müller). By John Lawson Hart, p. 417–420.

The relation of temperature to the seaward migration of young sockeye salmon (*Oncorhynchus nerka*). By R. E. Foerster, p. 421–438.

Studies on salt fish. II. The effect of salt concentration on preservation. By A. Labrie and N. E. Gibbons, p. 439–449.

The food and the food supply of sockeye salmon (*Oncorhynchus nerka* Walbaum) in Cultus Lake, British Columbia. By William E. Ricker, p. 450–468.

The pigments of salmon. By Basil E. Bailey, p. 469–472.

Some characteristics of the enzymes of the pyloric caeca of cod and haddock. By W. W. Johnston, p. 473–485.

The series "Journal of the Biological Board of Canada" was concluded, and replaced by the "Journal of the Fisheries Research Board of Canada."

(b) JOURNAL OF THE FISHERIES RESEARCH BOARD OF CANADA

Abbreviation: J

Volume 4 (1938–1940)

Issue No. 1 (*published in 1938*)

Is local behaviour in salmon heritable? By H. C. White and A. G. Huntsman, p. 1–18.

On adequate quantitative sampling of the pelagic net plankton of a lake. By William E. Ricker, p. 19–32.

Seasonal and annual variations in quantity of pelagic net plankton, Cultus Lake, British Columbia. By William E. Ricker, p. 33–47.

The feeding of kingfishers: food of nestlings and effect of water height. By H. C. White, p. 48–52.

Paphia bifurcata, a new molluscan species from Ladysmith Harbour, B.C. By Daniel B. Quayle, p. 53–54.

Fish oils. VII. The pigments of pilchard oil. By B. E. Bailey, p. 55–58.

Fish oils. VIII. The approximate composition of the fatty acids of the oil of pilchards (*Sardinops caerulea*). By H. N. Brocklesby and K. F. Harding, p. 59–62.

Issue No. 2 (*published in 1938*)

Studies of fish spoilage. II. The origin of trimethylamine produced during the spoilage of cod muscle press juice. By S. A. Beatty, p. 63–68.

Fluctuations in the intensity of the spawning runs of rainbow trout at Paul Lake. By C. McC. Mottley, p. 69–87.

The larval development of *Pandalus stenolepis*. By Alfreda Berkeley Needler, p. 88–95.

Sea movements of Canadian Atlantic salmon kelts. By A. G. Huntsman, p. 96–135.

Studies of salt fish. III. Equilibrium moisture coefficients of salt fish muscle. By D. LeB. Cooper, p. 136–140.

Transplantation of pink salmon (*Oncorhynchus gorbuscha*) into Masset Inlet, British Columbia. in the barren years. By A. L. Pritchard, p. 141–150.

Issue No. 3 (*published in 1938*)

An investigation of the relative efficiencies of natural and artificial propagation of sockeye salmon (*Oncorhynchus nerka*) at Cultus Lake, British Columbia. By R. E. Foerster. p. 151–161.

The measurement of firmness of canned salmon and other semi-rigid bodies by the dynamic penetrometer method. I. Experiments with a multiple-needle penetrometer. By F. Charnley and R. S. Bolton, p. 162–173.

The adsorption of vitamin A from oils by soaps formed *in situ*. By H. N. Brocklesby and C. C. Kuchel, p. 174–183.

Mortality trend among young sockeye salmon (*Oncorhynchus nerka*) during various stages of lake residence. By R. E. Foerster, p. 184–191.

"Residual" and kokanee salmon in Cultus Lake. By W. E. Ricker, p. 192–218.

The influence of hydrogen-ion concentration on some acid resistant bacteria. By Dennis W. Watson, p. 219–227.

Issue No. 4 (*published in 1939*)

Studies of fish spoilage. III. The trimethylamine oxide content of the muscles of Nova Scotia fish. By S. A. Beatty, p. 229–232.

Homing tendency and age at maturity of pink salmon (*Oncorhynchus gorbuscha*) in British Columbia. By A. L. Pritchard, p. 233–251.

Studies of fish spoilage. IV. The bacterial reduction of trimethylamine oxide. By Dennis W. Watson, p. 252–266.

Studies of fish spoilage. V. The role of trimethylamine oxide in the respiration of *Achromobacter*. By Dennis W. Watson, p. 267–280.

The Mysidacea of eastern Canadian waters. By W. M. Tattersall. p. 281–286.

Larval life of the oyster (*Ostrea virginica*) in Bideford River. By J. C. Medcof. p. 287–301.

Order of appearance of scales in speckled trout. By P. F. Elson. p. 302–308.

Issue No. 5 (*published in 1940*)

The food of *Mergus serrator* on the Margaree River. N.S. By H. C. White. p. 309–311.

Factors influencing the vitamin A and D potency of grayfish liver oil. *Squalus sucklii* (Girard). By L. I. Pugsley, p. 312–322.

Factors influencing descent of Atlantic salmon smolts. By H. C. White, p. 323–326.

Effectiveness of benzoic acid ice for fish preservation. By H. L. A. Tarr and B. E. Bailey, p. 327–336.

The nesting and embryo of *Zoarces anguillaris*. By H. C. White, p. 337–338.

Temporary migrations of Gulf stream water on the Atlantic seaboard. By H. B. Hachey, p. 339–348.

Effects of light on movements of herring. By W. H. Johnson, p. 349–354.

Le poisson frais. I. Le rôle du *p*H sur la conservation du poisson. By Aristide Nadeau, p. 355–362.

An addition compound of histidine. By W. W. and M. L. Johnston, p. 363–366.

The bacterial reduction of trimethylamine oxide to trimethylamine. By H. L. A. Tarr, p. 367–377.

Surface water temperatures of the Canadian Atlantic coast. By H. B. Hachey, p. 378–391.

Feeding of the herring. By W.H. Johnson, p. 392–395.

Vitamin A and D potencies of liver and intestinal oils of halibut (*Hippoglossus hippoglossus*). By L.I. Pugsley, p. 396–404

Vitamin A and D potencies of liver and intestinal oils of gray cod (*Gadus macrocephalus*). By L.I. Pugsley, p. 405–408.

Resistance of Atlantic salmon to sea water. By A.G. Huntsman and W.S. Hoar, p. 409–411.

Studies of fish spoilage. VI. The breakdown of carbohydrates, proteins and amino acids during spoilage of cod muscle press juice. By S.A. Beatty and V.K. Collins, p. 412–423.

Hydrographic features of the waters of Saint John Harbour. By H.B. Hachey, p. 424–440.

The weight-length relationship of the Atlantic salmon. By William S. Hoar, p. 441–460.

A specific gravity method of determining fatness (condition) in herring (*Clupea pallasii*). By A.L. Tester, p. 461–471.

Vitamin A and D potencies of liver and intestinal oils of red, black and ling cod. By L.I. Pugsley, p. 472–477.

Proximate analysis of British Columbia herring in relation to season and condition factor. By John Lawson Hart, Albert L. Tester, Desmond Beall, and John P. Tully, p. 478–490.

Effects of current on the movement of speckled trout. By Paul F. Elson, p. 491–499.

Volume 5 (1940–1942)

Issue No. 1 (*published in 1940*)

Observations on the viability of *Bacterium salmonicida*. By D. C. B. Duff, M. Isobel MacArthur, and Helen G. Thompson, p. 1–7.

Growth of young shipworms (*Teredo navalis*) in Malpeque Bay. By A.W.H. and A.B. Needler. p. 8–10.

The development of the vertebral column of the Pacific herring (*Clupea pallasii*). By Agnes M. Gwyn, p. 11–22.

The distribution of pteropods in the waters of eastern Canada and Newfoundland. By C. J. Kerswill, p. 23–31.

Studies of fish spoilage. VII. Dimethylamine production in the spoilage of cod muscle press juice. By S. A. Beatty and V. K. Collins, p. 32–35.

Effectiveness of ice containing sodium nitrite for fish preservation. By H. L. A. Tarr and P. A. Sunderland, p. 36–42.

Relation of "catch per unit effort" to abundance and rate of exploitation. By W.E. Ricker, p. 43–70.

Embryonic developmental rates and egg-laying of Canadian lobsters. By W. Templeman, p. 71–83.

Factors limiting distribution and size in the starfish. By G.F.M. Smith, p. 84–103.

Issue No. 2 (*published in 1940*)

Nova Scotian autumn cod spawning. By R. A. McKenzie, p. 105–120.

Le poisson frais. II. Le rôle du *p*H sur le développement des bactéries. By Aristide Nadeau, p.121–130.

Food of the Rocky Mountain whitefish, *Prosopium williamsoni* (Girard). By J. L. McHugh, p. 131–137.

Periodicity in the numbers of the cladoceran *Scapholeberis mucronata*. By M. W. Smith, p. 138–147.

The comparative value of preservatives for fresh fillets. By H. L. A. Tarr and P. A. Sunderland, p. 148–163.

Occurrence and retention of plankton within the estuary. By Harold M. Rogers, p. 164–171.

"Sea lice" (*Lepeophtheirus*) and death of salmon. By H. C. White, p. 172–175.

Life history of sea-running brook trout (*Salvelinus fontinalis*) of Moser River, N.S. By H. C. White, p. 176–186.

Specificity of triamineoxidease. By H. L. A. Tarr, p. 187–196.

Issue No. 3 (*published in 1941*)

Studies of fish spoilage. VIII. Volatile acid of cod muscle press juice. By V. K. Collins, p. 197–202.

Studies of fish spoilage. IX. Changes in buffering capacity of cod muscle press juice. By V. K. Collins, C. C. Kuchel, and S. A. Beatty, p. 203–210.

The fate of trimethylamine oxide and trimethylamine in man. By H. L. A. Tarr, p. 211–216.

Trypic enzymes from certain commercial fishes. By W.W. Johnston, p. 217–226.

Cyclical abundance and birds versus salmon. By A. G. Huntsman, p. 227–235.

Temperatures and salinities under the ice in a shallow inlet. By A. W. H. Needler. p. 236–243.

Ices with sodium nitrite and sodium acid phosphate for fish preservation. By H. L. A. Tarr and P. A. Sunderland, p. 244–248.

Studies on salt fish. IV. Survival of *Elberthella typhosa* and *Escherichia coli* on salt fish. By M. Frank and E. Hess, p. 249–252.

The influence of temperature and salinity on the condition of oysters (*Ostrea virginica*). By J.C. Medcof and A.W.H. Needler, p. 253–257.

Migrating behaviour of sea-running *Salvelinus fontinalis*. By H. C. White, p. 258–264.

The action of nitrites on bacteria. By H.L.A. Tarr, p. 265–275.

Studies on salt fish. V. Studies on *Sporendonema epizoum* from "dun" salt fish. By M. Frank and E. Hess, p. 276–286.

Studies on salt fish. VI. Halophilic brown molds of the genus *Sporendonema* emend. Ciferri et Redaelli. By M. Frank and E. Hess, p. 287–292.

The consumption of young sockeye salmon by predaceous fish. By W. E. Ricker. p. 293–313.

Issue No. 4 (*published in 1942*)

The effect of reduction of predaceous fish on survival of young sockeye salmon at Cultus Lake. By R. E. Foerster and W. E. Ricker, p. 315–336.

Growth of the Rocky Mountain whitefish. By J. L. McHugh, p. 337–343.

The nutritive value of marine products. XV. Proximate analyses of canned British Columbia crab, shrimps and clams. By L. I. Pugsley, p. 344–346.

Variation of vertebral centra in young Pacific herring (*Clupea pallasii*). By J. L. McHugh, p. 347–360.

Sex reversal in individual oysters. By Alfreda Berkeley Needler, p. 361–364.

Effect of light on copepods as food for Passamaquoddy herring. By W. H. Johnson, p. 365–376.

The waters of the Scotian shelf. By H. B. Hachey, p. 377–397.

Surface non-tidal currents in the approaches to Juan de Fuca Strait. By John P. Tully, p. 398–409.

Issue No. 5 (*published in 1942*)

Effect of *p*H and NaCl on swelling and drip in fish muscle. By H. L. A. Tarr, p. 411–427.

Vitamine A and D potencies of oil from body, liver and intestines of pilchard, herring, salmon and tullibee. By L. I. Pugsley, p. 428–437.

Studies on salt fish. VII. Red halophilic bacteria in seawater and fish slime and intestines. By Ernest Hess, p. 438–439.

Regeneration of the scales of Atlantic salmon. By A. A. Blair, p. 440–447.

Food of rainbow, cutthroat and brown trout in the Cowichan River system, B.C. By Clarence Idyll, p. 448–458.

New records of Pycnogonida from the Canadian Atlantic coast. By Louis Giltay, p. 459–460.

Effect of temperature on activity of *Salvelinus fontinalis.* By Paul F. Elson, p. 461–470.

Sea life of the brook trout (*Salvelinus fontinalis*). By H. C. White, p. 471–473.

Vertebral number of young herring in southern British Columbia. By J. L. McHugh, p. 474–484.

Death of salmon and trout with high temperature. By A. G. Huntsman, p. 485–501.

Volume 6 (1942–1946)

Issue No. 1 (*published in 1942*)

Studies on salt fish. VIII. Effects of various salts on preservation. By Ernest Hess, p. 1–9.

Studies on salt fish. IX. Effect of environment upon growth of red halophilic bacteria. By Ernest Hess, p. 10–16.

Studies on salt fish. X. Effect of disinfectants and preservatives on red halophilic bacteria. By Ernest Hess and N. E. Gibbons, p. 17–23.

Life history of *Lepeophtheirus salmonis.* By H. C. White, p. 24–29.

Peculiar variants of the agonid fish *Odontopyxis trispinosus.* By Carl L. Hubbs, p. 30–36.

Atlantic salmon redds and artificial spawning beds. By H. C. White, p. 37–44.

Glucose metabolism of bacteria from commercial fish. By G. J. Sigurdsson and A. J. Wood, p. 45–52.

The surface concept in measurement of fish spoilage. By A. J. Wood, G. J. Sigurdsson, and W. J. Dyer, p. 53–62.

The effect of sodium nitrite on experimental animals. By H. L. A. Tarr and N. M. Carter, p. 63–73.

The action of nitrites on bacteria: further experiments. By H. L. A. Tarr, p. 74–89.

Diurnal variations in feeding activity of young salmon and trout. By William S. Hoar, p. 90–101.

Issue No. 2 (*published in 1943*)

Relative activities of free and esterified vitamin D. By B. E. Bailey, p. 103–108.

Fish oils. IX. Certain fish oils as sources of nutritionally essential fatty acids. By B. E. Bailey, p. 109–112.

The adsorption of vitamin A from fish liver oils. By Lyle A. Swain, p. 113–118.

Rise and fall of bacterial populations in fish muscle. By H.L.A. Tarr, p. 119–128.

Biological and oceanographical conditions in Hudson Bay. II. Polychaeta from Hudson Bay. By E. and C. Berkeley, p. 129–132.

Bottom fauna of portions of the Cowichan River. By Clarence Purvis Idyll, p. 133–139.

Sex, gonad development and seasonal gonad changes in *Paphia staminea* Conrad. By D. B. Quayle, p. 140–151.

Relation between moult cycle and phosphorus content of blood and muscle in lobster. By Andrew Hollett, p. 152–157.

Diurnal fluctuations in the upstream migration of coho and spring salmon. By Ferris Neave. p. 158–163.

Tagging experiments on British Columbia pilchards. By John Lawson Hart, p. 164–182.

Magnesium-ammonium-phosphate crystal formation in canned lobster. By Andrew Hollett, p. 183–193.

Reduction of trimethylamine oxide by bacteria. I. The Enterobacteriaceae. By A.J. Wood and Elizabeth A. Baird, p. 194–201.

Issue No. 3 (*published in 1944*)

Obituaries, p. 203–208.

Structure, deposition and quality of oyster shell (*Ostrea virginica* Gmelin). By J. C. Medcof. p. 209–216.

Physical characteristics and behaviour of pink salmon fry at McClinton Creek, B.C. By A. L. Pritchard, p. 217–227.

Sexual dimorphism in the lobster (*Homarus americanus*). By Wilfred Templeman, p. 228–232.

Action of nitrates and nitrites on bacteria. By H. L. A. Tarr, p. 233–242.

Reduction of trimethylamine oxide by bacteria. 2. The Micrococcaceae. By Elizabeth A. Baird and A. J. Wood, p. 243–244.

Racial characteristics and migratory habits in *Salmo gairdneri*. By Ferris Neave, p. 245–251.

Effects of dropping on the subsequent hatching of teleostean ova. By Helen I. Battle, p. 252–256.

Chemical inhibition of growth of fish spoilage bacteria. By H. L. A. Tarr, p. 257–266.

The relation of lake population density to size of young sockeye salmon (*Oncorhynchus nerka*). By R. E. Foerster, p. 267–280.

Abdominal width and sexual maturity of female lobsters on Canadian Atlantic coast. By Wilfred Templeman, p. 281–290.

The catchability of lobsters. By G.F.M. Smith, p. 291–301.

Issue No. 4 (*published in 1945*)

Water, microorganisms and volatile bases in dehydrated fish. By H.L.A. Tarr. p. 303–310.

Variable seaward migration of salmon. By A.G. Huntsman, p. 311–325.

Glycerol yield from dogfish liver oil. By Lyle A. Swain and B.H. Morton, p. 326–333.

Effect of *Triaenophorus* on growth of two fishes. By Richard B. Miller, p. 334–337.

Factors affecting deposition of smoke constituents on fish. By E. P. Linton and H. V. French. p. 338–348.

Bacteriostatic action of hydroxylamine. By H.L.A. Tarr, p. 349–350.

Issue No. 5 (*published in 1945*)

Amines in fish muscle. I. Colorimetric determination of trimethylamine as the picrate salt. By W. J. Dyer, p. 351–358.

Amines in fish muscle. II. Development of trimethylamine and other amines. By W. J. Dyer and Yvonne A. Mounsey, p. 359–367.

Factors affecting triamineoxidease. I. Inhibition of the enzyme. By J. B. Neilands, p. 368–379.

Drying of heavily salted fish. By E.P. Linton and A.L. Wood, p. 380–391.

Counts of gill rakers and pyloric caeca in pink salmon. By A. L. Pritchard, p. 392–398.

Migration of salmon parr. By A.G. Huntsman, p. 399–402.

Issue No. 6 (*published in 1946*)

Amines in fish muscle. III. Spoilage of iced eviscerated cod. By W.J. Dyer, F.E. Dyer, and M. Snow, p. 403–413.

Colorimetric nitrite determination. By W.J. Dyer, p. 414–418.

On *Themisto libellula* in Baffin Island coastal waters. By M.J. Dunbar, p. 419–434.

Effect of abnormal CO_2 tension on development of herring eggs. By Alice M. Kelley, p. 435–440.

L'iodate de potassium et la glucose comme agents inhibiteurs de la décomposition du poisson. By Henri Fougère, p. 441–448.

Effect of relaying and transferring on fatness of oysters. By J. C. Medcof, p. 449–455.

Issue No. 7 (*published in 1946*)

Obituary, p. 457–459.

The state of the west Greenland current up to 1944. By M.J. Dunbar, p. 460–471.

Polychaeta from the Bay of Fundy, 1911–12. By W.H.T. Baillie, p. 472–475.

Heat stroke in Canadian Maritime stream fishes. By A.G. Huntsman, p. 476–482.

Restocking depleted sockeye salmon areas by transfer of eggs. By R. E. Foerster, p. 483–490.

Effect of trimethylamine oxide on the growth of bacteria. By Chas. H. Castell, p. 491–497.

The mud-blister worm, *Polydora*, in Canadian oysters. By J. C. Medcof, p. 498–505.

Volume 7 (1947–1950)

Issue No. 1 (*published in 1947*)

Water transports and current patterns for the Scotian shelf. By H. B. Hachey, p. 1–16.

Action of Enterobacteriaceae on choline and related compounds. By Frances E. Dyer and A. J. Wood, p. 17–21.

Food of killifish and white perch in relation to supply. By M. W. Smith, p. 22–34.

The nutritive value of marine products. XVI. The biological value of fish flesh proteins. By J. M. R. Beveridge, p. 35–49.

Issue No. 2 (*published in 1947*)

Sulphur distribution in fish flesh proteins. By J. M. R. Beveridge, p. 51–54.

Silver electrodes for sterilizing sea-water. By C. H. Castell, D. G. Ellis, and G. W. Anderson, p. 55–61.

Growth of *Clostridium* in seaweeds and marine fish. By Chas. H. Castell, p. 62–69.

Effect of salting and smoking on survival and growth of *Clostridium* in fish. By C. H. Castell and G. W. Anderson, p. 70–73.

The nutritive value of marine products. XVII. Value of B-vitamins in fish flesh for growth of young rats. By J. M. R. Beveridge, p. 74–87.

Experiments to develop sea-run from land-locked sockeye salmon (*Oncorhynchus nerka kennerlyi*). By R. E. Foerster, p. 88–93.

Thiaminase in aquatic animals of Nova Scotia. By J. B. Neilands, p. 94–99.

Issue No. 3 (*published in 1947*)

Chemical disinfection and corrosion prevention. By H. L. A. Tarr, p. 101–115.

Estimation of corrosion in canned herring. By Andrew Hollett, p. 116–127.

Microorganisms from Atlantic cod. By Frances E. Dyer, p. 128–136.

Control of rancidity in fish flesh. I. Chemical antioxidants. By H. L. A. Tarr, p. 137–154.

Issue No. 4 (*published in 1948*)

Comparative value of germicidal ices for fish preservation. By H. L. A. Tarr, p. 155–161.

Differentiation of marine and non-marine cultures of *Pseudomonas.* By C. H. Castell, p. 162–168.

Cruising speed of goldfish in relation to water temperature. By F. E. J. Fry and J. S. Hart, p. 169–175.

Observations on the lake trout of Great Bear Lake. By R. B. Miller and W. A. Kennedy, p. 176–189.

Pike (*Esox lucius*) from four northern Canadian lakes. By R. B. Miller and W. A. Kennedy, p. 190–199.

Le séchage artificiel du capelan frais. By H. Fougère, p. 200–211.

*Issue No. 5 (*published in 1948*)

Obituaries. (p. 213–217).

A snail commensal with the soft-shell clam. By J. C. Medcof, p. 219–220.

Action of sulpha compounds, antibiotics and nitrite on growth of bacteria in fish flesh. By H. L. A. Tarr and Catherine P. Deas, p. 221–223.

Efficiency of natural propagation of the pink salmon (*Oncorhynchus gorbuscha*) in McClinton Creek, Masset Inlet, B.C. By A. L. Pritchard, p. 224–236.

Control of rancidity in fish flesh. II. Physical and chemical methods. By H. L. A. Tarr, p. 237–247.

Fertility and fertilization of streams. By A. G. Huntsman, p. 248–253.

*Issue No. 6 (*published in 1948*)

Trends and cycles in surface temperatures of the Canadian Atlantic. By H. B. Hachey and H. J. McLellan, p. 355–362.

Odontosyllis at Bermuda and lunar periodicity. By A. G. Huntsman, p. 363–369.

Bacteria associated with spoilage of cod fillets. By C. H. Castell and G. W. Anderson, p. 370–377.

Relation of bacterial counts to quality of cod fillets. By C. H. Castell, G. W. Anderson, and Hilliard Pivnick, p. 378–388.

Chromatographic analysis of the unsaponifiable matter of marine animal oils. By Lyle A. Swain, p. 389–402.

Issue No. 7 (*published in 1949*)

Populations of herring along the west coast of Vancouver Island on the basis of mean vertebral number, with a critique of the method. By A. L. Tester, p. 403–420.

Effect of nitrite on reduction of trimethylamine oxide in cod fillets. By C. H. Castell, p. 421–429.

Pseudomonas putrefaciens from cod fillets. By C. H. Castell, J. F. Richards, and Isobel Wilmot, p. 430–431.

Salmon and eel movement in constant circular current. By Viola M. Davidson, p. 432–448.

Issue No. 8 (*published in 1949*)

Changes in the palatability of cod fillets. By F.E. Dyer and W.J. Dyer, p. 449–460.

Bacterial reduction of sodium nitrite and formation of trimethylamine in fish. By W.J. Dyer, p. 461–470.

Etude sur la purification de l'huile de loup-marin. By L.-C. Dugal and A. Cardin, p. 471–489.

Paralytic shellfish poisoning and *Goniaulax tamarensis.* By Alfreda Berkeley Needler, p. 490–504.

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*Pages 255–354 do not exist because of an error in pagination between these two issues.

Issue No. 9 (*published in 1949*)

The occurrence of *Sarcotaces* in Canada. By E. Kuitunen-Ekbaum, p. 505–512.

Amino acid composition of fishery products. By Catherine P. Deas and H.L.A. Tarr, p. 513–521.

Control of rancidity in fish flesh. III. Carbonyl enediols as antioxidants. By H.L.A. Tarr and N. E. Cooke, p. 522–527.

Nitrite-reducing bacteria on cod fillets. By C.H. Castell, p. 528–535.

Further studies on the bacteriological reduction of nitrite in fish during spoilage. By W.J. Dyer and C.H. Castell, p. 536–544.

Effects of water circulation on the growth of quahaugs and oysters. By C.J. Kerswill, p. 545–551.

Bacteriological peptones from fish flesh. By H.L.A. Tarr and Catherine P. Deas, p. 552–560.

The effect of *p*H on the enzymatic reduction of trimethylamine oxide. By C. H. Castell and J. M. Snow, p. 561–562.

Issue No. 10 (*published in 1950*)

Amino acid composition of fishery products (II). By Phyllis W. Ney, Catherine P. Deas, and H. L. A. Tarr, p. 563–566.

The influence of trimethylamine oxide on the bacterial reduction of redox indicators. By C. H. Castell, p. 567–575.

Note on the colorimetric estimation of trimethylamine. By W.J. Dyer, p. 576–579.

Amines in fish muscle. IV. Spoilage in freshly cut cod fillets. By W.J. Dyer and F.E. Dyer, p. 580–584.

Proteins in fish muscle. I. Extraction of protein fractions in fresh fish. By W.J. Dyer, H.V. French, and J.M. Snow, p. 585–593.

Proteins in fish muscle. II. Colorimetric estimation of fish muscle protein. By J.M. Snow, p. 594–598.

Proteins in fish muscle. III. Denaturation of myosin by freezing. By J.M. Snow, p. 599–607.

The acid-soluble phosphorus compounds of fish skeletal muscle. By H.L.A. Tarr, p. 608–612.

Volume 8 (1950–1952)

Issue No. 1 (*published in 1950*)

The physical limnology of Great Slave Lake. By D. S. Rawson, p. 1–66.

Issue No. 2 (*published in 1950*)

The effect of fin-clipping on the cruising speed of goldfish and coho salmon fry. By Roland W. Radcliffe, p. 67–73.

The Maillard reaction in fish products. By H.L.A. Tarr, p. 74–81.

The physical limnology of Lakelse Lake, British Columbia. By J.R. Brett, p. 82–102.

Lakelse Lake sockeye survival. By J.R. Brett and J.A. McConnell, p. 103–110.

The value of temperatures close to freezing on the storage of fish. By C.H. Castell and W.A. MacCallum, p. 111–116.

Some observations relating to an unidentified growth factor for young salmonoid fishes. I. By Norman E. Cooke and R.V. Tomlinson, p. 117–123.

Issue No. 3 (*published in 1951*)

Fertility of salmonoid eggs and sperm after storage. By I. Barrett, p. 125–133.

Pelagic Amphioda of the Belle Isle Strait region. By E.L. Bousfield, p. 134–163.

Changes in body chloride, density, and water content of chum (*Oncorhynchus keta*) and coho (*O. kisutch*) salmon fry when transferred from fresh water to sea water. By Virginia Safford Black, p. 164–177.

A study of the Skeena River climatological conditions with particular reference to their significance in sockeye production. By J. R. Brett, p. 178–187.

Issue No. 4 (*published in 1951*)

Influence de la température et du temps de désodorisation sur quelques propriétés de l'huile de phoque (*Phoca groenlandica*) et en particulier sur sa stabilité. By L.-C. Dugal and A. Cardin, p. 189–194.

Reduction of trimethylamine oxide by bacterial enzymes. By C. H. Castell and J. Murray Snow, p. 195–206.

Studies of the fish of Great Slave Lake. By D.S. Rawson, p. 207–240.

The behaviour of chum, pink and coho salmon in relation to their seaward migration. By William S. Hoar, p. 241–263.

The relationship of fishing effort by gill nets to the interval between lifts. By W. A. Kennedy, p. 264–274.

Lamprey marks on whales. By Gordon C. Pike, p. 275–280.

On the planning of experiments for the estimation of fish populations. By D. B. DeLury, p. 281–307.

Issue No. 5 (*published in 1952*)

Amines in fish muscle. V. Trimethylamine oxide estimation. By W.J. Dyer, F.E. Dyer, and J. M. Snow, p. 309–313.

Amines in fish muscle. VI. Trimethylamine oxide content of fish and marine invertebrates. By W. J. Dyer, p. 314–324.

Proteins in fish muscle. IV. Denaturation by salt. By J.D. Duerr and W.J. Dyer, p. 325–331.

Effects of storms on the water conditions in the Magdalen Shallows. By L. Lauzier, p. 332–339.

The lake whitefish in Kerr Lake, New Brunswick. By M. W. Smith, p. 340–346.

The food and growth of the maskinonge (*Esox masquinongy* Mitchill) in Canadian waters. By Alan S. Hourston, p. 347–368.

The relation of digging frequency to productivity of the butter clam, *Saxidomus giganteus* Deshayes. By D. B. Quayle, p. 369–373.

Notes on dispersion and growth of some British Columbia bottom fishes. By J. I. Manzer, p. 374–377.

Oceanographic data of the western Canadian Arctic region, 1935–37. By John P. Tully, p. 378–382.

Issue No. 6 (*published in 1952*)

Limnology and trout angling in Charlotte County lakes, New Brunswick. By M. W. Smith, p. 383–452.

Issue No. 7 (*published in 1952*)

Skeena River sockeye escapement and distribution. By J. R. Brett, p. 453–468.

Growth and *Triaenophorus* parasitism in relation to taxonomy of Lake Winnipeg ciscoes (*Leucichthys*). By J. J. Keleher, p. 469–478.

The effects of tagging upon a Pacific Coast flounder, *Parophrys vetulus*. By J. I. Manzer, p. 479–485.

The relative toxicity of certain metals to lobsters. By D. G. Wilder, p. 486–487.

Re-discovery of the Polychaete worm *Trypanosyllis ingens* Johnson. By E. and C. Berkeley, p. 488–490.

Volume 9 (1952–1953)

Issue No. 1 (*published in 1952*)

The arctic char of the west coast of Hudson Bay. By Wm. M. Sprules, p. 1–15.

Further Ostracoda of the Vancouver Island region. By Verna Z. Smith, p. 16–41.

Currents and net transport in Loudoun Channel, April 1950. By L. A. E. Doe, p. 42–64.

Issue No. 2 (*published in 1952*)

Station list of the "Calanus" Expeditions, 1947–50. By M. J. Dunbar and E. H. Grainger, p. 65–82.

Contribution to the study of the fishes of Ungava Bay. By M. J. Dunbar and H. H. Hildebrand, p. 83–128.

Issue No. 3 (*published in 1952*)

The vitamin B_{12} activity of natural material with particular reference to cod liver protein. By A. Guttman and F. A. Vandenheuvel, p. 129–140.

The first record of the smooth lump-sucker, *Cyclopterichthys ventricosus* (Pallas), in British Columbia waters. By W. A. Clemens and G. V. Wilby, p. 141–142.

The agonid fish, *Pallasina barbata aix* (Starks), from British Columbia. By W. E. Barraclough, p. 143–147.

The importance of *Flavobacterium* in fish spoilage. By C. H. Castell and E. G. Mapplebeck, p. 148–156.

Improved medium for red halophilic bacteria from salt fish. By H. P. Dussault and R. A. Lachance, p. 157–163.

The distribution of vitamin B_{12}-active substances in some marine invertebrates of British Columbia. By B. E. Maxwell, p. 164–168.

Issue No. 4 (*published in 1952*)

A comparative study of anadromous and freshwater populations of brook trout (*Salvelinus fontinalis* (Mitchill)). By D. G. Wilder, p. 169–203.

The benthos of Cultus Lake. By W. E. Ricker, p. 204–212.

Issue No. 5 (*published in 1952*)

Current measurements in the Grand Manan Channel. By D. G. MacGregor and H. J. McLellan, p. 213–222.

The biology of the surface zone zooplankton of a boreo-arctic Atlantic Ocean area. By William V. Kielhorn, p. 223–264.

Issue No. 6 (*published in 1952*)

Temperature tolerance in young Pacific salmon, genus *Oncorhynchus*. By J. R. Brett, p. 265–323.

Issue No. 7 (*published in 1952*)

Vertical temperature distribution in the Great Lakes. By H. B. Hachey, p. 325–328.

Surface temperatures of the Great Lakes. By F. Graham Millar, p. 329–376.

Issue No. 8 (*published in 1952*)

The survival of red halophiles in water and in brines. By C. H. Castell and E. G. Mapplebeck, p. 377–387.

The water transfer in codfish muscle immersed in sodium chloride solutions. By H. Fougère, p. 388–392.

A study of the "lipoxidase" in the flesh of British Columbia herring. By M. M. R. Khan, p. 393–416.

Issue No. 9 (*published in 1953*)

Limnobiology of Cowichan Lake, British Columbia. By G. Clifford Carl, p. 417–449.

Principles affecting the size of pink and chum salmon populations in British Columbia. By Ferris Neave, p. 450–491.

Volume 10 (1953)

Issue No. 1

Movements and decline of large Quoddy herring. By A. G. Huntsman, p. 1–50.

Issue No. 2

The morphometry of the coregonine fishes of Great Bear Lake, N.W.T. By W. A. Kennedy. p. 51–61.

The effect of fasting on the bacterial flora of the intestine of fish. By Leo Margolis, p. 62–63.

The vitamin B_{12} content of certain fishery materials. By B. A. Southcott and H. L. A. Tarr, p. 64–68.

The action of hydroxylamine on bacteria. By H. L. A. Tarr, p. 69–75.

The central nervous system of barnacles (Cirripedia). By Ira E. Cornwall, p. 76–84.

Micronereis nanaimoensis sp. n.: with some notes on its life-history. By E. Berkeley and C. Berkeley, p. 85–95.

Issue No. 3

The exchanges of fresh and salt waters in the Bay of Fundy and in Passamaquoddy Bay. By Bostwick H. Ketchum and D. Jean Keen, p. 97–124.

Seasonal variation of temperature and salinity of surface waters of the British Columbia coast. By G. L. Pickard and D. C. McLeod, p. 125–145.

The St. Lawrence spring run-off and summer salinities in the Magdalen Shallows. By Louis Lauzier, p. 146–147.

A winter incursion of slope water on the Scotian Shelf. By H. B. Hachey. p. 148–153.

Issue No. 4

The slope water off the Scotian Shelf. By H. J. McLellan, L. Lauzier. and W. B. Bailey. p. 155–176.

Certain aspects of oceanography in the coastal waters of Labrador. By David C. Nutt. p. 177–186.

Seasonal fluctuations in the selected temperature of speckled trout, *Salvelinus fontinalis* (Mitchill). By Charlotte M. Sullivan and Kenneth C. Fisher, p. 187–195.

Upper lethal temperatures of some British Columbia freshwater fishes. By Edgar C. Black. p. 196–210.

Issue No. 5

Theory of growth and competition in natural populations. By Gordon A. Riley, p. 211–223.

The standing crop of net plankton in lakes. By D. S. Rawson, p. 224–237.

Methods of plankton collection and a description of a new sampler. By R. R. Langford. p. 238–252.

Factors influencing the growth of phytoplankton. By A. M. McCombie. p. 253–282.

The mineralization of plankton. By Herman Kleerekoper, p. 283–291.

Issue No. 6

The coho salmon of Cultus Lake and Sweltzer Creek. By R. E. Foerster and W. E. Ricker. p. 293–319.

Colour pattern of humpback whales from the coast of British Columbia. By Gordon C. Pike, p. 320–325.

On the age, growth, migration, reproductive potential and feeding habits of the arctic char (*Salvelinus alpinus*) of Frobisher Bay, Baffin Island. By E. H. Grainger, p. 326–370.

Issue No. 7

The growth rate of the American lobster (*Homarus americanus*). By D. C. Wilder, p. 371–412.

Growth maturity, fecundity and mortality in the relatively unexploited whitefish, *Coregonus clupeaformis*, of Great Slave Lake. By W. A. Kennedy, p. 413–441.

An economic approach to the optimum utilization of fishery resources. By H. Scott Gordon, p. 442–457.

Issue No. 8

The use of catch-effort and tagging data in estimating a flatfish population. By K. S. Ketchen, p. 459–485.

The bottom fauna of Great Slave Lake. By D.S. Rawson, p. 486–520.

Preparation and viscosity of chitosans. By C.V. Lusena and R. C. Rose, p. 521–522.

Responses of coho and chum salmon fry to current. By Dixon MacKinnon and William S. Hoar, p. 523–538.

Experiments with the harbour seal, *Phoca vitulina*, a definitive host of a marine nematode, *Porracaecum decipiens*. By D. M. Scott, p. 539–547.

Preliminary experiments using lights and bubbles to deflect migrating young spring salmon. By J.R. Brett and D. MacKinnon, p. 548–559.

A collection of oceanic fishes from off northeastern Japan. By Giles M. Mead and F. H. C. Taylor, p. 560–582.

The ultraviolet spectrum and basicity of "acid-soluble" chitin. By Howard K. Zimmerman, Jr., p. 583–589.

A study of the proteolytic enzyme activity of the pyloric caeca of redfish. By Joseph A. Stern and Ernest E. Lockhart, p. 590–598.

Volume 11 (1954)

Issue No. 1

Observations on the trout-perch *Percopsis omiscomaycus* (Walbaum), at Heming Lake, Manitoba. By G. H. Lawler, p. 1–4.

Catch and winter food of lake trout in certain Algonquin Park lakes. By N. V. Martin, p. 5–10.

European ling—first record from North America waters. By Wilfred Templeman and A. M. Fleming, p. 11–13.

Surface tidal currents in Juan de Fuca Strait. By R. R. Herlinveaux, p. 14–31.

Annual variations of temperature and salinity in the Bay of Fundy. By W. B. Bailey, D. G. MacGregor, and H. B. Hachey, p. 32–47.

Tidal current observations in Hecate Strait. By Bruce S. Mackay, p. 48–56.

Growth hormone from salmon pituitary glands. By A. Jampolsky and W. S. Hoar, p. 57–62.

The presence of androgens in chum salmon (*Oncorhynchus keta* Walbaum). By Gilbert D. Potter and William S. Hoar, p. 63–68.

The behaviour of juvenile Pacific salmon with particular reference to the sockeye (*Oncorhynchus nerka*). By William S. Hoar, p. 69–97.

Station list of the *Calanus* Expeditions, 1951–52, together with Frobisher Bay stations, 1948, 1950 and 1951, and Resolution Island stations, 1950. By E. H. Grainger, p. 98–105.

Issue No. 2

Odour perception and orientation in fishes. By Arthur D. Hasler, p. 107–129.

Hearing in fish, with special reference to *Semotilus atromaculatus atromaculatus* (Mitchill). By H. Kleerekoper and E. C. Chagnon, p. 130–152.

Temperature reception and responses in fish. By Charlotte M. Sullivan, p. 153–170.

Issue No. 3

A comparative study of the yellowtail flounder from three Atlantic fishing areas. By D. M. Scott, p. 171–197.

The general oceanography of the Strait of Belle Isle. By A. G. Huntsman, W. B. Bailey, and H. B. Hachey, p. 198–260.

Adaptation of the "drop plate" method for the enumeration of red halophilic bacteria. By H. P. Dussault, p. 261–266.

List of the parasites recorded from sea mammals caught off the west coast of North America. By L. Margolis, p. 267–283.

Tagging returns, age studies and fluctuations in abundance of Lake Winnipeg whitefish, 1931–1951. By W. A. Kennedy, p. 284–309.

Some aspects of olfactory perception in migrating adult coho and spring salmon. By J.R. Brett and D. MacKinnon, p. 310–318.

Three kinds of whale-lice (Cyamidae: Amphipoda) from the Pacific coast of Canada, including a new species. By L. Margolis, p. 319–325.

Notes on the life-history of the polychaete *Dodecaceria fewkesi* (nom. n.). By E. Berkeley and C. Berkeley, p. 326–334.

The rockfish *Sebastodes rubrivinctus* in British Columbia waters. By K. S. Ketchen, p. 335–338.

Issue No. 4

On the relation of adult sockeye salmon (*Oncorhynchus nerka*) returns to known smolt seaward migrations. By R.E. Foerster, p. 339–350.

Migrations of spiny dogfish tagged in Newfoundland waters. By Wilfred Templeman, p. 351–354.

Preparation of cod liver residues and vitamin B_{12} concentrates. By Beryl Truscott, D. G. Gage, and P. L. Hoogland, p. 355–361.

Stream studies on planted Atlantic salmon. By H. R. McCrimmon, p. 362–403.

Bottom temperatures on the Scotian Shelf. By H. J. McLellan, p. 404–418.

Temperature-salinity relations and mixing on the Scotian Shelf. By H. J. McLellan, p. 419–430.

Distribution of appendicularians in relation to the Strait of Belle Isle. By Miklos D. F. Udvardy, p. 431–453.

Additions to the polychaete fauna of Canada, with comments on some older records. By E. Berkeley and C. Berkeley, p. 454–471.

Effect of olfactory occlusion on migrating silver salmon (*O. kisutch*). By Warren J. Wisby and Arthur D. Hasler, p. 472–478.

The abundance and distribution of entomostracan plankton at Lakelse Lake, B.C., 1949–1952. By V.H. McMahon, p. 479–499.

Issue No. 5

Offshore characteristics in the deep waters of the Strait of Georgia as indicated by bathypelagic fish. By W. E. Barraclough and M. Waldichuk, p. 501–506.

Polychaetous annelids of Ungava Bay, Hudson Strait, Frobisher Bay and Cumberland Sound. By E. H. Grainger, p. 507–528.

Contrasting susceptibilities of two fish species to a diet destructive to Vitamin B_1. By Robert W. Harrington, Jr., p. 529–534.

Relations between feeding and the sexual cycle of the haddock. By R. E. S. Homans and V. D. Vladykov, p. 535–542.

New stoneflies (Plecoptera) from western North America. By Stanley G. Jewett, Jr., p. 543–549.

Movements of cutthroat trout after different periods of retention upstream and downstream from their homes. By Richard B. Miller, p. 550–558.

Stock and recruitment. By W. E. Ricker, p. 559–623.

The trophic status of Port John Lake, British Columbia. By J. C. Robertson, p. 624–651.

The relative growth of hybrid char (*Salveninus fontinalis* × *Cristivomer namaycush*). By E. P. Slastenenko, p. 652–659.

Annual growth rings and rate of growth of the giant scallop, *Placopecten magellanicus* (Gmelin) in the Digby area of the Bay of Fundy. By J. A. Stevenson and L. M. Dickie, p. 660–671.

Issue No. 6

A survey of the parasites of freshwater fishes from the mainland of British Columbia. By Ralph V. Bangham and James R. Adams, p. 673–708.

The amphipod Crustacea of Ungava Bay, Canadian Eastern Arctic. By M. J. Dunbar, p. 709–798.

Tidal currents in Juan de Fuca Strait. By R. H. Herlinveaux, p. 799–815.

Tisbe celata n. sp., a harpacticoid copepod from the mantle cavity of the edible mussel in New Brunswick. By Arthur G. Humes, p. 816–826.

Growth maturity and mortality in the relatively unexploited lake trout, *Cristivomer namaycush*, of Great Slave Lake. By W. A. Kennedy, p. 827–852.

The anomaly of mean sea level in Seymour Narrows, B.C. By G. Wilfred LaCroix and John P. Tully, p. 853–883.

Notes on the geographical distribution and the hosts of the cestode genus *Triaenophorus* in North America. By G. H. Lawler and W. B. Scott, p. 884–893.

Experimental infection of Atlantic cod with a larval marine nematode from smelt. By D. M. Scott, p. 894–900.

Osmophilism of *Sporendonema epizoum*. By E. B. Vaisey, p. 901–903.

Taxonomic characters of the eastern North America chars (*Salvelinus* and *Cristivomer*). By Vadim D. Vladykov, p. 904–932.

The oxygen supply to salmon eggs in spawning beds. By W. Percy Wickett, p. 933–953.

Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907): I. The distribution of the metacercaria in eastern Canadian flounders. By R. W. Wolfgang, p. 954–962.

Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907): II. Biology, with special reference to the stages affecting the winter flounder. By R. W. Wolfgang, p. 963–987.

Sex ratios in sockeye salmon (*Oncorhynchus nerka*). By R. E. Foerster, p. 988–997.

Volume 12 (1955)

Issue No. 1 (*published January 15, 1955*)

Offshore waters of the Canadian Pacific coast. By L.A.E. Doe, p. 1–34.

Distribution, age and growth of eastern Pacific albacore (*Thunnus alalunga* Gmelin). By J.M. Partlo, p. 35–60.

Histological studies on albacore (*Thunnus alalunga*) gonads from the eastern Pacific. By J.M. Partlo, p. 61–67.

The artificial drying of lightly salted codfish. By R. Legendre, p. 68–74.

Electrophoretic studies of proteins extractable from post-rigor cod at low ionic strength. By J.R. Dingle, D.E. Eagles, and J.M. Neelin, p. 75–84.

Economic factors in catch fluctuations. By H. Scott Gordon, p. 85–92.

Cestode and nematode infection of sockeye smolts from Babine Lake, British Columbia. By E. Dombroski, p. 93–96.

Some helminth parasites of Canadian Pacific whales. By Leo Margolis and Gordon C. Pike, p. 97–120.

Notes on the morphology, taxonomy and synonymy of several species of whale-lice (Cyamidae: Amphipoda). By Leo Margolis, p. 121–133.

The resistance to salt water corrosion of various types of metal wire used in the tagging of flatfish. By C. R. Forrester and K. S. Ketchen, p. 134–142.

More folliculinids (Ciliata: Heterotricha) from British Columbia. By E. A. Andrews, p. 143–146.

The smallmouth bass fishery of South Bay, Lake Huron. By J. M. Fraser, p. 147–177.

Phototactic and pigmentary responses of sockeye salmon smolts following injury to the pineal organ. By William S. Hoar, p. 178–185.

Issue No. 2 (*published March 15, 1955*)

Isopleth diagrams to predict equilibrium yields of a small flounder fishery. By L.M. Dickie and F.D. McCracken, p.187–209.

Fertilization and predator control to improve trout angling in natural lakes. By M.W. Smith, p. 210–237.

The American eel in certain fresh waters of the Maritime Provinces of Canada. By M.W. Smith and J.W. Saunders, p. 238–269.

Day and night characteristics of spatfall and of behaviour of oyster larvae. By J.C. Medcof, p. 270–286.

The egg masses of the Naticidae (Gastropoda). By M.E.C. Giglioli, p. 287–327.

Issue No. 3 (*published May 15, 1955*)

Spoilage of haddock in the trawlers at sea: The measurement of spoilage and standards of quality. By C.H. Castell and Rosalie E. Triggs, p. 329–341.

Some physical features of the Miramichi estuary. By E.L. Bousfield, p. 342–361.

Some observations on the movement of Pacific salmon fry through a small impounded water basin. By D. MacKinnon and J. R. Brett, p. 362–368.

Notes on the seaward migration of pink and chum salmon fry. By Ferris Neave, p. 369–374.

Change in bottom temperatures on the Scotian Shelf. By H.J. McLellan, p. 375–386.

Resistance and tolerance of young speckled trout (*Salvelinus fontinalis*) to oxygen lack, with special reference to low oxygen acclimation. By M.P. Shepard, p. 387–446.

A method for removing the effect of recruitment on Petersen-type population estimates. By Richard A. Parker, p. 447–450.

The Skeena River salmon fishery, with special reference to sockeye salmon. By D.J. Milne, p. 451–485.

Issue No. 4 (*published July 15, 1955*)

Limnological and biological observations in the region of the Ungava or Chubb Crater, Province of Quebec. By N.V. Martin. With an Appendix by Jacques Rousseau and Marcel Raymond, p. 487–498.

On the ecology of Skeena River whitefishes, *Coregonus* and *Prosopium*. By H. Godfrey, p. 499–542.

The standing crop of fish in lakes. By Kenneth D. Carlander, p. 543–570.

A statistical examination of *Anisakis* larvae Nematoda in herring (*Clupea pallasi*) of the British Columbia coast. By Yvonne M. M. Bishop and Leo Margolis, p. 571–592.

The chaetognaths of western Canadian coastal waters. By Helen E. Lea, p. 593–617.

The trout population of a Nova Scotia lake as affected by habitable water, poisoning of the shallows and stocking. By F. R. Hayes and D. A. Livingstone, p. 618–635.

Issue No. 5 (*published September 15, 1955*)

Extracts and enzymic hydrolysates from fish liver and mammalian liver. By A. Guttman, p. 637–645.

Note on albumin protein fractions in a sturgeon. By J. R. Dingle and W. J. Dyer, p. 646–648.

Estimation of recruitment and natural mortality rate from age-composition and catch data in British Columbia herring populations. By A. L. Tester, p. 649–681.

Pollution survey of Humber Arm and Exploits River. By G. R. Vavasour and A. A. Blair, p. 682–697.

Atlantic cod populations along the southern Canadian mainland as shown by vertebral count studies. By R. A. McKenzie and G. F. M. Smith, p. 698–705.

Measuring seepage through salmon spawning gravel. By R. A. Pollard, p. 706–741.

The relation between scale diameter and body length of Kamloops trout, *Salmo gairdneri kamloops*. By S. B. Smith, p. 742–753.

A comparison of Atlantic sea sturgeon with a new subspecies from the Gulf of Mexico (*Acipenser oxyrhynchus de sotoi*). By Vadim D. Vladykov, p. 754–761.

The cirripede Crustacea of the Hudson Strait region, Canadian Eastern Arctic. By E. L. Bousfield, p. 762–767.

The inconnu (*Stenodus leucichthys mackenziei*) in Great Slave Lake and adjoining waters. By W. A. Fuller, p. 768–780.

Food and feeding habits of Brunnich's murre (*Uria lomvia lomvia*) on Akpatok Island. By Leslie M. Tuck and H. J. Squires, p. 781–792.

Issue No. 6 (*published November 25, 1955*)

Obituary—Guilford Bevil Reed, 1887–1955, p. 794–796.

Fluctuations in abundance of the giant scallop, *Placopecten magellanicus* (Gmelin), in the Digby area of the Bay of Fundy. By L. M. Dickie, p. 797–857.

The planktonic copepods (Calanoida, Cyclopodia, Monstrilloida) of Ungava Bay, with special reference to the biology of *Pseudocalanus minutus* and *Calanus finmarchicus*. By Marion Fontaine, p. 858–898.

Echinoderms of Ungava Bay, Hudson Strait, Frobisher Bay and Cumberland Sound. By E. H. Grainger, p. 899–916.

Blood levels of hemoglobin and lactic acid in some freshwater fishes following exercise. By Edgar C. Black, p. 917–929.

Age, maturity, spawning and food of burbot (*Lota lota*) in Lake Winnipeg. By L. C. Hewson, p. 930–940.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 941–942.

Index to the volume, p. 943–950.

Volume 13 (1956)

Issue No. 1 (*published February 10, 1956*)

Movement of drift cards in Georgian Bay in 1953. By F.E.J. Fry, p. 1–5.

Basic productivity of Trevor Channel and Alberni Inlet from chemical measurements. By Michael Waldichuk, p. 7–20.

Spoilage of fish in the vessels at sea: 2. Treatment on the deck and in the hold. By C.H. Castell, W.A. MacCallum, and H.E. Power, p. 21–39.

Station list of the "Calanus" Expeditions, 1953–54. By E.H. Grainger and M.J. Dunbar, p. 41–45.

Frozen oysters. By Margaret L. Morton and W.J. Dyer, p. 47–51.

The net plankton of Great Slave Lake. By D.S. Rawson, p. 53–127.

Storage of frozen plaice fillets. By W.J. Dyer and Margaret L. Morton, p. 129–134.

The collapse and recovery of a small whitefish fishery. By Richard B. Miller, p. 135–146.

Issue No. 2 (*published April 3, 1956*)

Jellied condition in the American plaice *Hippoglossoides platessoides* (Fabricius). By Wilfred Templeman and Gertrude L. Andrews, p. 147–182.

Study of red halophilic bacteria in solar salt and salted fish: I. Effect of Bacto-oxgall. By H.P. Dussault, p. 183–194.

Study of red halophilic bacteria in solar salt and salted fish: II. Bacto-oxgall as a selective agent for differentiation. By H.P. Dussault, p. 195–199.

A note on the production of nitrite from hydroxylamine by some heterotrophic bacteria. By C.H. Castell and E.G. Mapplebeck, p. 201–206.

Spoilage of fish in the vessels at sea: 3. The value of nitrite ice and nitrite dips for the preservation of gutted fish in the hold of the vessel. By C.H. Castell and G.K. Gunnarsson, p. 207–218.

Atlantic salmon tagged in east coast Newfoundland waters at Bonavista. By A.A. Blair, p. 219–232.

On a collection of polychaetous annelids from northern Banks Island, from the south Beaufort Sea, and from northwest Alaska; together with some new records from the east coast of Canada. By E. Berkeley and C. Berkeley, p. 233–246.

Effects of temperature, salinity and oxygen on the survival of the American lobster. By D.W. McLeese, p. 247–272.

Issue No. 3 (*published July 12, 1956*)

Ionic ratios of some of the major components in river-diluted sea water in Bute and Knight Inlets, British Columbia. By Milton Kirsch, p. 273–289.

Spoilage of fish in the vessels at sea: 4. Effect of removal of gills on rate of spoilage. By C.H. Castell and Maxine F. Greenough, p. 291–296.

On the sharpness of oceanographic boundaries south of Nova Scotia. By H.J. McLellan, p. 297–301.

On the origin of deep Baffin Bay water. By W.B. Bailey, p. 303–308.

The behaviour of the migrating pink and chum salmon fry. By William S. Hoar, p. 309–325.

Interspecific competition and population control in freshwater fish. By P.A. Larkin, p. 327–342.

On the specific identity of the larval *Porrocaecum* (Nematoda) in Atlantic cod. By D.M. Scott, p. 343–356.

Climatic trends and fluctuations in yield of marine fisheries of the Northeast Pacific. By K.S. Ketchen, p. 357–374.

An investigation of the electrical "spike" potentials produced by the sea lamprey (*Petromyzon marinus*) in the water surrounding the head region. By H. Kleerekoper and Kira Sibakin, p. 375–383.

The oceanography of Chatham Sound, British Columbia. By Ronald W. Trites, p. 385–434.

Currents and transport in Cabot Strait. By D.G. MacGregor, p. 435–448.

Issue No. 4 (*published September 19, 1956*)

Populations of herring (*Clupea harengus* L.) in Newfoundland waters. By S. N. Tibbo, p. 449–466.

Relationship of otolith lengths and weights in the haddock *Melanogrammus aeglefinus* (L.) to the rate of growth of the fish. By Wilfred Templeman and H.J. Squires, p. 467–487.

Parasitic helminths and arthropods from Pinnipedia of the Canadian Pacific coast. By Leo Margolis, p. 489–505.

Diet-induced differences in the weight–length relationship of aquarium fed sardines (*Sardinops caerulea*). By David A. Farris, p. 507–513.

Indices of productivity in British Columbia lakes. By T. G. Northcote and P. A. Larkin, p. 515–540.

Notes on Polychaeta from the east coast of Vancouver Island and from adjacent waters, with a description of a new species of *Aricidea*. By E. Berkeley and C. Berkeley, p. 541–546.

The effect of fry plantings on whitefish production in eastern Lake Ontario. By E.D. Lapworth, p. 547–558.

Chemical changes in nitrite-treated Atlantic cod fillets in relation to spoilage assessment. By E.B. Vaisey, p. 559–567.

Storage of frozen rosefish fillets. By W.J. Dyer, Margaret L. Morton, Doris I. Fraser, and E.G. Bligh, p. 569–579.

Surface and bottom currents in the Strait of Georgia. By G.L. Pickard, p. 581–590.

Some temperature and salinity records from the Canadian Arctic during 1954 and 1955. By D.V. Ellis, p. 591–598.

Issue No. 5 (*published November 30, 1956*)

Growth, mortality and movements of a sanctuary population of maskinonge (*Esox masquinongy* Mitchill). By E.J. Crossman, p. 599–612.

The choice and solution of mathematical models for predicting and maximizing the yield of a fishery. By Kenneth E.F. Watt, p. 613–645.

Factors influencing the survival of the lemon sole (*Parophrys vetulus*) in Hecate Strait, British Columbia. By K.S. Ketchen, p. 647–694.

On the distribution of young sockeye salmon (*Oncorhynchus nerka*) in Babine and Nilkitkwa Lakes, B.C. By W.E. Johnson, p. 695–708.

The oceanography of Hebron Fjord, Labrador. By David C. Nutt and Lawrence K. Coachman, p. 709–758.

Issue No. 6 (*published December 31, 1956*)

Distribution and taxonomy of fishes in the Mackenzie drainage of British Columbia. By C.C. Lindsey, p. 759–789.

Acetone–water mixtures for the extraction and rapid estimation of fats of biological materials, particularly fish products. By N. Dambergs, p. 791–797.

Fecundity of wild speckled trout (*Salvelinus fontinalis*) in Quebec lakes. By Vadim D. Vladykov, p. 799–841.

The biology of arctic char (*Salvelinus alpinus* L.) in northern Labrador. By C.W. Andrews and E. Lear, p. 843–860.

Spoilage of fish in the vessels at sea: 5. Bilgy fish. By Norma L. McLean and C.H. Castell, p. 861–868.

Processing of cod and haddock viscera: I. Laboratory experiments. By H.C. Freeman and P.L. Hoogland, p. 869–877.

Index to the volume, p. 879–886.

Volume 14 (1957)

Issue No. 1 (*published February 20, 1957*)

On the variation in bottom fauna and fish yield in relation to trophic level and lake dimensions. By F.R. Hayes, p. 1–32.

The molecular nature of organic matter in lakes and oceans, with lesser reference to sewage and terrestrial soils. By J.R. Vallentyne, p. 33–82.

The smaller Cetacea of eastern Canadian waters. By D.E. Sergeant and H.D. Fisher, p. 83–115.

Issue No. 2 (*published April 30, 1957*)

Alterations in the blood level of lactic acid in certain salmonoid fishes following muscular activity. I. Kamloops trout, *Salmo gairdneri*. By Edgar C. Black, p. 117–134.

Salmon tagging at Francis Harbour Bight, Labrador. By A.A. Blair, p. 135–140.

Salmon tagging at Cape Charles, Labrador. By A.A. Blair, p. 141–144.

An investigation of the electrical "spike" potentials produced by the sea lamprey (*Petromyzon marinus*) in the water surrounding the head region. II. By H. Kleerekoper and Kira Sibakin, p. 145–151.

Mortalities among developing trout and salmon ova following shock by direct-current electrical fishing gear. By Harold Godfrey, p. 153–164.

Some factors influencing the distribution of pelagic copepods in the Queen Charlotte Islands area. By Frances Ella Cameron, p. 165–202.

Scale characteristics of yearling coastal cutthroat and steelhead trout. By E.H. Vernon and R.G. McMynn, p. 203–212.

On the distinctness and origin of the slope water off the Scotian Shelf and its easterly flow south of the Grand Banks. By H.J. McLellan, p. 213–239.

Issue No. 3 (*published July 15, 1957*)

Properties of the water in the Strait of Georgia, British Columbia, and influencing factors. By John P. Tully and Allan J. Dodimead, p. 241–319.

Physical oceanography of the Strait of Georgia, British Columbia. By Michael Waldichuk, p. 321–486.

Issue No. 4 (*published September 19, 1957*)

The physical oceanography of Bute Inlet, British Columbia. By Susumu Tabata and George L. Pickard, p. 487–520.

The qualitative and quantitative distribution of plankton in the Strait of Georgia in relation to certain oceanographic factors. By Joseph Eugène Henri Légaré, p. 521–552.

Some considerations concerning sturgeon spawning periodicity. By George Roussow, p. 553–572.

Morphometric comparison of three races of kokanee (*Oncorhynchus nerka*) within a large British Columbia lake. By E. H. Vernon, p. 573–598.

Evolution and distribution of the coregonids. By Stanford H. Smith, p. 599–604.

Fresh water transport determination from the heat budget with applications to British Columbia inlets. By G. L. Pickard and R. W. Trites, p. 605–616.

The action of *Pseudomonas* on fish muscle: 1. Organisms responsible for odours produced during incipient spoilage of chilled fish muscle. By C. H. Castell and Maxine F. Greenough, p. 617–625.

Influence of intermittent short storage periods at 15°F., as encountered during refrigerator car transportation, on the quality of frozen cod stored at 0°F. By W. J. Dyer, Doris I. Fraser, D. G. Ellis, and W. A. MacCallum, p. 627–635.

Yellow discoloration and deterioration in frozen lobster meat. By E. G. Bligh, W. J. Dyer and D. C. Horne, p. 637–644.

Alterations in the blood level of lactic acid in certain salmonoid fishes following muscular activity. II. Lake trout, *Salvelinus namaycush.* By Edgar C. Black, p. 645–649.

Possible effects of water diversions on fish distribution in British Columbia. By C. C. Lindsey, p. 651–668.

Issue No. 5 (*published October 29, 1957*)

Some considerations of population dynamics and economics in relation to the management of the commercial marine fisheries. By Milner B. Schaefer, p. 669–681.

The optimum level of fisheries exploitation. By Harold C. Frick, p. 683–686.

Permanence and size of home territory in stream-dwelling cutthroat trout. By Richard B. Miller, p. 687–691.

Squid, *Illex illecebrosus* (LeSueur), in the Newfoundland fishing area. By H. J. Squires, p. 693–728.

Herring gulls and common terns as possible predators of lobster larvae. By D. H. Mills, p. 729–730.

Oceanographic features of the Canadian Archipelago. By W. B. Bailey, p. 731–769.

The effect of certain antibiotics on the production of trimethylamine and hydrogen sulphide by bacterial enzymes. By C. H. Castell and Maxine F. Greenough, p. 771–774.

The action of *Pseudomonas* on fish muscle: 2. Musty and potato-like odours. By C. H. Castell, Maxine F. Greenough, and Norma L. Jenkin, p. 775–782.

Some effects of kraft mill effluent on young Pacific salmon. By D. F. Alderdice and J. R. Brett, p. 783–795.

Issue No. 6 (*published December 13, 1957*)

Have the genetic patterns of fishes been altered by introductions or by selective fishing? By Richard B. Miller, p. 797–806.

Alterations in the blood level of lactic acid in certain salmonoid fishes following muscular activity. III. Sockeye salmon, *Oncorhynchus nerka.* By Edgar C. Black, p. 807–814.

Reactions of juvenile Pacific salmon to light. By W. S. Hoar, M. H. A. Keenleyside, and R. G. Goodall, p. 815–830.

Nematodes in the fillets of cod and other fishes in Newfoundland and neighbouring areas. By Wilfred Templeman, H. J. Squires, and A. M. Fleming, p. 831–897.

The redfish (*Sebastes marinus* L.) in the western Gulf of St. Lawrence. By D. H. Steele, p. 899–924.

Further study of the influence of short storage periods, 3 days to 2 weeks at 15° F., on the quality of frozen cod stored at 0° F. By W. J. Dyer, Doris I. Fraser, and W. A. MacCallum, p. 925–929.

A new technique for studying non-tidal drift with results of experiments off Gay Head, Mass., and in the Bay of Fundy. By Dean F. Bumpus, Joseph Chase, C. Godfrey Day, David H. Frantz, Jr., David D. Ketchum, and Robert G. Walden, p. 931–944.

The effect of the prevailing winds on the inshore water masses of the Hecate Strait region, B.C. By F. G. Barber, p. 945–952.

Results from tagging experiments on a spawning stock of petrale sole, *Eopsetta jordani* (Lockington). By Dayton L. Alverson and Bruce M. Chatwin, p. 953–974.

Variation in the incidence of larval nematodes in Atlantic cod fillets along the southern Canadian mainland. By D. M. Scott and W. R. Martin, p. 975–996.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 997–998.

Index to the volume, p. 999–1008.

Volume 15 (1958)

Issue No. 1 (*published February 7, 1958*)

Incidence of a parasitic ascarid, *Porrocaecum decipiens*, in the common porpoise, *Phocoena phocoena*, from the lower Bay of Fundy. By D. M. Scott and H. D. Fisher, p. 1–4.

The abundance and distribution of the northern sea lion (*Eumetopias jubata*) on the coast of British Columbia. By Gordon C. Pike and Brian E. Maxwell, p. 5–17.

The estimation of population size by a marking and recapture procedure. By D. B. DeLury, p. 19–25.

The role of competition in the mortality of hatchery trout. By Richard B. Miller, p. 27–45.

Redescription of *Lampetra ayresii* (Gunther) of western North America, a species of lamprey (Petromyzontidae) distinct from *Lampetra fluviatilis* (Linnaeus) of Europe. By Vadim D. Vladykov and W. I. Follett, p. 47–77.

Circulation on the Scotian Shelf as indicated by drift bottles. By R. W. Trites and R. E. Banks, p. 79–89.

Sea water intrusion into the Fraser River and its relation to the incidence of shipworms in Steveston Cannery Basin. By Susumu Tabata and Robin J. LeBrasseur, p. 91–113.

Issue No. 2 (*published March 31, 1958*)

Energy considerations in the Bay of Fundy system. By H. J. McLellan, p. 115–134.

Proteins in fish muscle. 11. On the extraction of myosin from cod muscle with potassium iodide. By J. R. Dingle, p. 135–153.

Physical oceanographic results of the "Calanus" Expeditions in Ungava Bay, Frobisher Bay, Cumberland Sound, Hudson Strait and northern Hudson Bay, 1949–1955. By M. J. Dunbar. p. 155–201.

Limnological studies of Heming Lake, Manitoba, and two adjacent lakes. By G. H. Lawler and N. H. F. Watson, p. 203–218.

Some aspects of growth and reproduction of the bearded seal, *Erignathus barbatus* (Erxleben). By I. A. McLaren, p. 219–227.

Some effects of temporary exposure to low dissolved oxygen levels on Pacific salmon eggs. By D. F. Alderdice, W. P. Wickett, and J. R. Brett, p. 229–249.

Rapid learning of a constant course by travelling schools of juvenile Pacific salmon. By William S. Hoar, p. 251–274.

Issue No. 3 (*published May 18, 1958*)

Distribution, spawning and racial studies of the capelin, *Mallotus villosus* (Müller), in the offshore Newfoundland area. By T. K. Pitt, p. 275–293.

Age and growth of the capelin, *Mallotus villosus* (Müller), from Newfoundland and Grand Bank areas. By T. K. Pitt, p. 295–311.

The fecundity of Pacific herring (*Clupea pallasi*) in British Columbia coastal waters. By Fuzuko Nagasaki, p. 313–330.

A comparison of sockeye salmon catches at Rivers Inlet and Skeena River, B.C., with particular reference to age at maturity. By Harold Godfrey, p. 331–354.

Variation with fish length, sex, stage of sexual maturity, and season in the appearance and volume of the drumming muscles of the swim-bladder in the haddock, *Melanogrammus aeglefinus* (L.). By Wilfred Templeman and V. M. Hodder, p. 355–390.

The evolution of migratory behaviour among juvenile salmon of the genus *Oncorhynchus*. By William S. Hoar, p. 391–428.

Heat budget of the water in the vicinity of Triple Island, British Columbia. By Susumu Tabata, p. 429–451.

Solar radiation penetrating the ocean. A review of requirements, data and methods of measurement, with particular reference to photosynthetic productivity. By J. D. H. Strickland, p. 453–493.

Issue No. 4 (*published July 11, 1958*)

Incidence of the ascarid *Porrocaecum decipiens* in the stomachs of three species of seals along the southern Canadian Atlantic mainland. By D. M. Scott and H. D. Fisher, p. 495–516.

Round haddock landings in Newfoundland: Quantity and quality relative to gutted haddock. By Wilfred Templeman and A. M. Fleming, p. 517–527.

A preliminary study of the feeding habits of the Japanese oyster drill, *Acinebra japonica*. By Kenneth K. Chew and Ronald Eisler, p. 529–535.

The effect of various lighting conditions on the efficiency of "candling" cod fillets for detection of parasites. By H.E. Power, p. 537–542.

Artificial drying of salt fish by thermocouple control. By R. Legendre, p. 543–554.

The composition of the fatty acids liberated from the phospholipids in the preparation of salted codfish. By A. Cardin, M.A. Bordeleau, and A. Laframboise, p. 555–558.

Toleration of fish to toxic pollution. By T.W. Beak, p. 559–572.

Hyperactivity as a lethal factor in fish. By Edgar C. Black, p. 573–586.

The effect of temperature on the crusing speed of young sockeye and coho salmon. By J.R. Brett, M. Hollands, and D.F. Alderdice, p. 587–605.

The preferred temperature of fish and their midsummer distribution in temperate lakes and streams. By R.G. Ferguson, p. 607–624.

Climatic temperature changes and commercial yields of some marine fisheries. By F. Heward Bell and Alonzo T. Pruter, p. 625–683.

On the preference of roaches (*Leuciscus rutilus*) for trinitrophenol, studied with the fluviarium technique. By Per Eric Lindahl and Arne Marcström, p. 685–694.

Red flesh in redfish, *Sebastes marinus* (L.). By Wilfred Templeman and E.J. Sandeman, p. 695–700.

Grading fish for quality. 1. Trimethylamine values of fillets cut from graded fish. By C.H. Castell, Maxine F. Greenough, R.S. Rodgers, and A.S. MacFarlane, p. 701–716.

Grading fish for quality. 2. Statistical analysis of the results of experiments regarding grades and trimethylamine values. By P.L. Hoogland, p. 717–728.

Grading fish for quality. 3. Grading of recently cut fillets. By C.H. Castell and Maxine F. Greenough, p. 729–748.

A method of estimating natural and fishing mortalities. By J.E. Paloheimo, p. 749–758.

Issue No. 5 (*published September 25, 1958*)

(*Biological Station, Nanaimo, B.C., Anniversary Issue*)

Editors' foreword, p. (i).

Fisheries Research Board of Canada Biological Station, Nanaimo, B.C., 1908–1958. By A.W.H. Needler, p. 759–777.

Reminiscences of a Director. By W.A. Clemens, p. 779–796.

A note on the response of developing chum salmon eggs to free carbon dioxide in solution. By D.F. Alderdice and W.P. Wickett, p. 797–799.

Polychaeta of the western Canadian Arctic. By E. Berkeley and C. Berkeley, p. 801–804.

The resistance of cultured young chum and sockeye salmon to temperatures below 0°C. By J.R. Brett and D.F. Alderdice, p. 805–813.

Some observations on the structure and photomechanical responses of the Pacific salmon retina. By J. R. Brett and M. A. Ali, p. 815–829.

Mortality rates and estimates of theoretical yield in relation to minimum commercial size of lingcod (*Ophiodon elongatus*) from the Strait of Georgia. British Columbia. By Bruce M. Chatwin, p. 831–849.

Progress report of drift bottle releases in the northeast Pacific Ocean. By A. J. Dodimead and H. J. Hollister, p. 851–865.

The Rivers Inlet sockeye salmon. By D.R. Foskett, p. 867–889.

Comparisons of the index of return for several stocks of British Columbia salmon to study variations in survival. By H. Godfrey, p. 891–908.

Population studies on juvenile herring in Barkley Sound, British Columbia. By Alan S. Hourston, p. 909–960.

Density and distribution of young sockeye salmon (*Oncorhynchus nerka*) throughout a multi-basin lake system. By W.E. Johnson, p. 961–982.

The occurrence of juvenile *Corynosoma* (Acanthocephala) in Pacific salmon (*Oncorhynchus* spp.). By L. Margolis, p. 983–990.

Maximum sustained yields from fluctuating environments and mixed stocks. By W.E. Ricker. p. 991–1006.

Spawning stock size and resultant production for Skeena sockeye. By M.P. Shepard and F.C. Withler, p. 1007–1025.

The Mark VI groundwater standpipe for measuring seepage through salmon spawning gravel. By L.D.B. Terhune, p. 1027–1063.

Drift bottle observations in the Strait of Georgia. By Michael Waldichuk, p. 1065–1102.

Review of certain environmental factors affecting the production of pink and chum salmon. By W.P. Wickett, p. 1103–1126.

Issue No. 6 (*published January 15, 1959*)

(*Biological Station, St. Andrews, N.B., Anniversary Issue*)

Editors' foreword, p. (i).

Fisheries Research Board of Canada Biological Station, St. Andrews, N.B., 1908–1958. Fifty years of research in aquatic biology. By J.L. Hart, p. 1127–1161.

On the dominant flow in the Strait of Belle Isle. By W.B. Bailey, p. 1163–1174.

The discoloration of Foxe Basin ice. By N.J. Campbell and A.E. Collin, p. 1175–1188.

Effects of high temperature on survival of the giant scallop. By L.M. Dickie, p. 1189–1211.

Shubenacadie salmon. By A.G. Huntsman, p. 1213–1218.

Zooplankton of the inner Bay of Fundy. By E. G. Jermolajev (*née* Kossiackine), p. 1219–1228.

The validity of otolith age determinations for haddock (*Melanogrammus aeglefinus* L.) from the Lockeport, N.S., area. By A. C. Kohler, p. 1229–1238.

Haddock scale-otolith comparisons. By A.C. Kohler and J.R. Clark, p. 1239–1246.

The deep waters in the Laurentian Channel. By L. M. Lauzier and R. W. Trites, p. 1247–1257.

Fatness of small herring in the Bay of Fundy. By A. H. Leim, p. 1259–1267.

On the biology and fishery of the Canadian Atlantic halibut, *Hippoglossus hippoglossus* L. By F.D. McCracken, p. 1269–1311.

Age and growth of smelt, *Osmerus mordax* (Mitchill), of the Miramichi River, New Brunswick. By R.A. McKenzie, p. 1313–1327.

Herring migrations in the Passamaquoddy region. By R. A. McKenzie and B. E. Skud, p. 1329–1343.

The activity and catchability of the lobster (*Homarus americanus*) in relation to temperature. By D. W. McLeese and D. G. Wilder, p. 1345–1354.

Trial control of the greater clam drill (*Lunatia heros*) by manual collection. By J.C. Medcof and L.W. Thurber, p. 1355–1369.

Determination of natural and fishing mortalities of cod and haddock from analysis of tag records off western Nova Scotia. By J.E. Paloheimo, p. 1371–1381.

Studies of reproduction and feeding of Atlantic cod (*Gadus callarias* L.) in the southwestern Gulf of St. Lawrence. By P.M. Powles, p. 1383–1402.

Movements of brook trout, *Salvelinus fontinalis* (Mitchill), between and within fresh and salt water. By M. W. Smith and J. W. Saunders, p. 1403–1449.

On the occurrence and distribution of larval herring (*Clupea harengus* L.) in the Bay of Fundy and the Gulf of Maine. By S. N. Tibbo, J. E. Henri Légaré, Leslie W. Scattergood, and R. F. Temple, p. 1451–1469.

Index to the volume, p. 1471–1484.

Volume 16 (1959)

Issue No. 1 (*Published January 15, 1959*)

Effect of chlortetracycline (Aureomycin) on the keeping quality of freshwater fish under tropical conditions. By K. M. Visweswariah, N. Moorjani, D. S. Bhatia, and V. Subrahmanyan, p. 1–5.

The chemical composition of sea water in the vicinity of the Atlantic Provinces of Canada. By E. Gordon Young, D. G. Smith, and W. M. Langille, p. 7–12.

The action of *Pseudomonas* on fish muscle: 3. Identification of organisms producing fruity and oniony odours. By C. H. Castell, Maxine F. Greenough, and Jacqueline Dale, p. 13–19.

The action of *Pseudomonas* on fish muscle: 4. Relation between substrate composition and the development of odors by *Pseudomonas fragi*. By C. H. Castell and Maxine F. Greenough, p. 21–31.

Proteins in fish muscle. 12. Ultracentrifuge studies on post-rigor extracts of structural protein. By D. G. Ellis and P. M. Winchester, p. 33–41.

Proteins in fish muscle. 13. Lipid hydrolysis. By W. J. Dyer and Doris I. Fraser, p. 43–52.

Proteins in fish muscle. 14. Cod tropomyosin. By J. R. Dingle and P. H. Odense, p. 53–62.

Extractives of fish muscle. 2. Solvent–water ratio in extraction of fat and water-solubles. By N. Dambergs, p. 63–71.

Errors in estimates of mortality obtained from virtual populations. By Yvonne M. M. Bishop, p. 73–90.

Three-year-old pink salmon. By Raymond E. Anas, p. 91–94.

Muscular fatigue and mortality in troll-caught chinook salmon (*Oncorhynchus tshawytscha*). By Robert R. Parker, p. 95–106.

A seven-year study of the fishery for lake whitefish, *Coregonus clupeaformis*, on Lake Winnipeg. By L. C. Hewson, p. 107–120.

Growth of fishes in different salinities. By P. Canagaratnam, p. 121–130.

A study of six winter seasons of commercial fishing on Lake Winnipeg. By L. C. Hewson. p. 131–145.

Issue No. 2 (*published March 15, 1959*)

Habitat and associated fauna of four species of fish in Ontario streams. By J. C. Hallam, p. 147–173.

Active respiration of fish in relation to ambient concentrations of oxygen and carbon dioxide. By Satyendra Prasanna Basu, p. 175–212.

The incidence of nematodes in the fillets of small cod from Lockeport, Nova Scotia, and the southwestern Gulf of St. Lawrence. By D. M. Scott and W. R. Martin, p. 213–221.

Spoilage of fish in the vessels at sea: 6. Variations in the landed quality of trawler-caught Atlantic cod and haddock during a period of 13 months. By C. H. Castell, Jacqueline Dale, and Maxine F. Greenough, p. 223–233.

Biochemical studies on sockeye salmon during spawning migration. V. Cholesterol, fat, protein and water in the body of the standard fish. By D. R. Idler and I. Bitners, p. 235–241.

Notes

Proteins in fish muscle. 15. Note on the preparation of actin from cod muscle with potassium iodine. By J. R. Dingle, p. 243–246.

Issue No. 3 (*published May 30, 1959*)

Distribution and movements of a predator, the rainbow trout, and its prey, the redside shiner, in Paul Lake, British Columbia. By E. J. Crossman, p. 247–267.

A predator–prey interaction in freshwater fish. By E. J. Crossman, p. 269–281.

Effects of some aspects of environment on the distribution of juvenile herring in Barkley Sound. By Alan S. Hourston, p. 283–308.

The relationship of the juvenile herring stocks in Barkley Sound to the major adult herring populations in British Columbia. By Alan S. Hourston, p. 309–320.

Diet, glycogen reserves and resistance to fatigue in hatchery rainbow trout. By R. B. Miller, A. C. Sinclair, and P. W. Hochachka, p. 321–328.

Variations in annual average weights of British Columbia pink salmon, 1944–1958. By Harold Godfrey, p. 329–337.

Mesh selection in herring gill nets. By Steinar Olsen, p. 339–349.

The distribution of Chaetognatha in the Gulf of Alaska in 1954 and 1956. By Paul N. Sund, p. 351–361.

The medaka (*Oryzias latipes*). A commentary and a bibliography. By John C. Briggs and Nobuo Egami, p. 363–380.

A portable conductivity bridge for field use. By Joe Hoy, p. 381–382.

Notes

Records of fishes from waters off the British Columbia coast. By Ferris Neave, p. 383–384.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 385–386.

Issue No. 4 (*published August 31, 1959*)

Obituary—Richard Birnie Miller, 1915–1959. p. 387–390.

Changes in *p*H, carbonate and lactate of the blood of yearling Kamloops trout, *Salmo gairdneri*, during and following severe muscular activity. By Edgar C. Black, Wing-Gay Chiu, Frances D. Forbes, and Arthur Hanslip, p. 391–402.

Station list of the 1955–58 field investigations of the Arctic Unit of the Fisheries Research Board of Canada. By E. H. Grainger and J. G. Hunter, p. 403–420.

Biochemical studies on sockeye salmon during spawning migration. VI. Ribonucleic acid and deoxyribonucleic acid. By Vera M. Creelman and Neil Tomlinson, p. 421–428.

Fatigue and mortality in troll-caught Pacific salmon (*Oncorhynchus*). By R. R. Parker, E. C. Black, and P. A. Larkin, p. 429–448.

Orange-red flesh in cod and haddock. By E. G. Bligh and W. J. Dyer, p. 449–452.

The annual oceanographic cycle at Igloolik in the Canadian Arctic. 1. The zooplankton and physical and chemical observations. By E. H. Grainger, p. 453–501.

Records of uncommon and unusual fishes from eastern Canadian waters, 1950–1958. By A. H. Leim and L. R. Day, p. 503–514.

Vernal and hiemal races among anadromous fishes. (Translated from Russian by W. E. Ricker). By L. S. Berg, p. 515–537.

Factors affecting the nitrite content of treated fish fillets. By C. H. Castell and Maxine F. Greenough, p. 539–552.

Notes

Variation in the annual average weight of chum salmon caught in British Columbia waters, 1946 to 1958. By H. Godfrey, p. 553–554.

Comparison of certain Scottish and Canadian experiments in respect of grading fish for quality. By J. M. Shewan and A. S. C. Ehrenberg, p. 555–557.

Biochemical studies on sockeye salmon during spawning migration. VIII. Androgen content of testes. By D. R. Idler and H. Tsuyuki, p. 559–560.

Studies on the conversion of fish stickwater to solubles. IV. Effect of enzyme treatment on the viscosity of whale solubles. By J. R. McBride, R. A. MacLeod, and D. R. Idler, p. 561–563.

Issue No. 5 (*published November 20, 1959*)

Some oceanographic features of the northeast Pacific Ocean during August 1955. By E. B. Bennett, p. 565–633.

Current measurements in Knight Inlet, British Columbia. By G. L. Pickard and G. Keith Rogers, p. 635–678.

Proximate analysis of Pacific herring (*Clupea pallasii*) and an evaluation of Tester's "Fat Factor." By J. R. McBride, R. A. MacLeod, and D. R. Idler, p. 679–684.

Condensed fish solubles. A review of its preparation and properties. By Robert A. MacLeod, p. 685–694.

Homing of rainbow trout to inlet and outlet spawning streams at Loon Lake, British Columbia. By C. C. Lindsey, T. G. Northcote, and G. F. Hartman, p. 695–719.

A concept of growth in fishes. By Robert R. Parker and Peter A. Larkin, p. 721–745.

The effect of sodium chloride on proteolysis and on the fate of amino acids present in the muscle of codfish (*Gadus callarias*). By E. Bilinski and H. Fougère, p. 747–754.

Notes

Distribution of a lipase enzyme in lingcod fillets and the effect of low temperature storage on its activity. By J. D. Wood, p. 755–757.

The first record of a northern blennioid fish, *Plectobranchus evides* Gilbert (family Stichaeidae), in British Columbia waters. By W. E. Barraclough, p. 759–760.

A record of the anomuran crustacean *Emerita analoga* (Stimpson) from British Columbia. By T. H. Butler, p. 761.

Issue No. 6 (*published December 31, 1959*)

Variations in caudal pigmentation in late-stage pre-extrusion larvae from *marinus*- and *mentella*-type female redfish from the Newfoundland area. By Wilfred Templeman and E. J. Sandeman, p. 763–789.

Keeping quality of Pacific coast dogfish. By R. H. Moyer, B. A. Southcott, E. G. Baker, and H. L. A. Tarr, p. 791–794.

Sagitta lyra, a biological indicator species in the subarctic waters of the eastern Pacific Ocean. By R. J. LeBrasseur, p. 795–805.

Marine and freshwater fishes of the Miramichi River and Estuary, New Brunswick. By R. A. McKenzie, p. 807–833.

Survival and production of pink and chum salmon in a coastal stream. By J. G. Hunter, p. 835–886.

Phosphorus enrichment of drainage waters from farm lands. By M. W. Smith, p. 887–895.

Additional observations concerning residual sockeye and kokanee (*Oncorhynchus nerka*). By W. E. Ricker, p. 897–902.

Some morphological differences between the subspecies of cutthroat trout, *Salmo clarkii clarkii* and *Salmo clarkii lewisi*, in British Columbia. By S. U. Qadri, p. 903–922.

Maximum depth and average depth of lakes. By J. Neumann, p. 923–927.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 929–931.

Index to Volume 16, p. 933–944.

Volume 17 (1960)

Issue No. 1 (*published February 23, 1960*)

The effect of time and temperature of cooking on the palatability and cooking losses of frozen Atlantic codfish fillets. By Iva L. Armstrong, Edna W. Park, and Barbara A. McLaren, with Donne Sutherland Parker, p. 1–7.

Incidence and distribution of infestation by *Sphyrion lumpi* (Krøyer) on the redfish, *Sebastes marinus* (L.), of the western North Atlantic. By Wilfred Templeman and H. J. Squires, p. 9–31.

Estimating abundance from longline catches. By Garth I. Murphy, p. 33–40.

The growth, length–weight relationship, and maturity of haddock (*Melanogrammus aeglefinus* L.) from the region of Lockeport, N.S. By A. C. Kohler, p. 41–60.

An anomalous increase of temperature in the ocean off the Pacific coast of Canada through 1957 and 1958. By J. P. Tully, A. J. Dodimead, and S. Tabata, p. 61–80.

Effect of the ingestion of *Triaenophorus* plerocercoids on the nutritional characteristics of whitefish fillets in the rations of puppies. By E. W. Crampton, p. 81–90.

An estuarine analogy in the sub-arctic Pacific Ocean. By J. P. Tully and F. G. Barber, p. 91–112.

Biochemical studies on sockeye salmon during spawning migration. IX. Fat, protein and water in the major internal organs and cholesterol in the liver and gonads of the standard fish. By D. R. Idler and I. Bitners, p. 113–122.

Notes

Pacific striped dolphin, *Lagenorhynchus obliquidens*, off the coast of British Columbia. By Gordon C. Pike, p. 123–124.

Biochemical studies on sockeye salmon during spawning migration. X. Glucose, total protein, non-protein nitrogen and amino acid nitrogen in plasma. By R. E. E. Jonas and R. A. MacLeod, p. 125–126.

Issue No. 2 (*published June 1, 1960*)

International Passamaquoddy Fisheries Board Fisheries Investigations 1956–59. Introductory account. By J. L. Hart and D. L. McKernan, p. 127–131.

Herring fishery in southern New Brunswick. By R. A. McKenzie and S. N. Tibbo, p. 133–168.

Predicted effects of proposed tidal power structures on groundfish catches in Charlotte County, N.B. By W. R. Martin, p. 169–173.

Studies of haddock in the Passamaquoddy Bay region. By F. D. McCracken, p. 175–180.

Sources of water contributed to the Bay of Fundy by surface circulation. By Dean F. Bumpus, p. 181–197.

Critical size and maximum yield for chinook salmon (*Oncorhynchus tshawytscha*). By Robert R. Parker, p. 199–210.

Observations on sound scatterers in Newfoundland waters. By Steinar Olsen, p. 211–219.

Seasonal distribution of some epipelagic fishes in the Gulf of Alaska region. By Ferris Neave and M. G. Hanavan, p. 221–233.

The food of the redfish *Sebastes marinus* (L.) in the Newfoundland area. By D. G. Lambert, p. 235–243.

A description of the semi-buoyant eggs and early development stages of the goldeye, *Hiodon alosoides* (Rafinesque). By Helen I. Battle and William M. Sprules, p. 245–266.

Description of young ammocoetes belonging to two species of lampreys: *Petromyzon marinus* and *Entosphenus lamottenii*. By Vadim D. Vladykov, p. 267–290.

Notes

Note on *Pontonema vacillatum* Leidy 1855 (Nematoda: Oncholaimidae) from soft-shell clams (*Mya arenaria*). By Roy C. Anderson and Neil Bourne, p. 291–293.

Issue No. 3 (*published July 10, 1960*)

Salinity preference, thyroid activity and the seaward migration of four species of Pacific salmon (*Oncorhynchus*). By Bertha Baggerman, p. 295–322.

A biochemical study of coho salmon (*Oncorhynchus kisutch*) maturing sexually in an aquarium. By Robert A. McLeod, R. E. E. Jonas, and E. Onofrey, p. 323–335.

On the forms, balance and cycle of phosphorus observed in the coastal and oceanic waters of the northeastern Pacific. By J. D. H. Strickland and K. H. Austin, p. 337–345.

Biochemical studies on sockeye salmon during spawning migration. XI. The free histidine content of the tissues. By J. D. Wood, D. W. Duncan, and M. Jackson, p. 347–351.

Characteristics of water and variations of salinity, temperature, and dissolved oxygen content of the water at Ocean Weather Station "P" in the northeast Pacific Ocean. By Susumu Tabata, p. 353–370.

The phosphorus-containing fractions of sterile lingcod muscle during storage at 0°C. By Neil Tomlinson, Vera M. Creelman, and K. G. Reid, p. 371–376.

An oceanographical and biological reconnaissance of Kennebecasis Bay and the Saint John River estuary. By R. W. Trites, p. 377–408.

A qualitative and quantitative study of the plankton of the Quoddy region in 1957 and 1958 with special reference to the food of the herring. By J. E. Henri Légaré and Delphine C. Maclellan, p. 409–448.

Notes

Inosine in the muscle of Pacific salmon stored in ice. By Vera M. Creelman and Neil Tomlinson, p. 449–451.

Issue No. 4 (*published August 24, 1960*)

The effect of impoundment on the population and movement of Atlantic salmon in Ellerslie Brook, Prince Edward Island. By J. W. Saunders, p. 453–473.

Assessment of the progressive spoilage of ice-stored shrimp. By J. R. Iyengar, K. Visweswariah, M. N. Moorjani, and D. S. Bhatia, p. 475–485.

Alterations in glycogen, glucose and lactate in rainbow and Kamloops trout, *Salmo gairdneri*, following muscular activity, p. 487–500.

Effect of the ingestion of *Porrocaecum* (codworm) on growth, voluntary intake and feed efficiency of beagle pups. By E. W. Crampton, E. Donefer, and Donna J. Schad, p. 501–505.

Facilities for anadromous fish passage, Passamaquoddy project. By M. C. Bell and C. H. Clay, p. 507–516.

The vertical migration of *Mysis relicta* in Lakes Huron and Michigan. By Alfred M. Beeton, p. 517–539.

Observations on the life history of the hybrid between eastern brook trout and lake trout in Algonquin Park, Ontario. By N. V. Martin and N. S. Baldwin, p. 541–551.

Possible effects of Passamaquoddy tidal power structures on the Canadian lobster industry. By D. G. Wilder, p. 553–563.

Biochemical studies on sockeye salmon during spawning migration. XIII. The distribution of phosphorus compounds, creatine and inositol in the major tissues. By V. M. Chang, H. Tsuyuki, and D. R. Idler, p. 565–582.

The role of electrical conductivity of water in shocking lampreys (*Petromyzon marinus*). By R. W. McCauley, p. 583–589.

A modified anchor dredge for collecting burrowing animals. By M. L. H. Thomas, p. 591–594.

Notes

Inhibition of bacterially produced trimethylamine. By James E. Stewart and C. H. Castell, p. 595–596.

Marine sterols. VII. The synthesis of 29-isofucosterol and the attempted synthesis of 17-dehydrocholesterol. By U. H. M. Fagerlund and D. R. Idler, p. 597–599.

Removal of free chlorine from running water by sodium thiosulphate. By R. W. McCauley and D. P. Scott, p. 601.

Issue No. 5 (*published October 1, 1960*)

On the source of free ribose formed *post mortem* in the muscle of lingcod (*Ophiodon elongatus*). By Neil Tomlinson and Vera M. Creelman, p. 603–606.

The microscopic bottom fauna of Lac la Ronge, Saskatchewan. By D. R. Oliver, p. 607–624.

A history of the Lake Winnipeg fishery for whitefish, *Coregonus clupeaformis*, with some reference to its economics. By L. C. Hewson, p. 625–639.

Maturity and breeding of the Pacific edible crab, *Cancer magister* Dana. By T. H. Butler, p. 641–646.

A mutant pike, *Esox lucius*. By G. H. Lawler, p. 647–654.

The behaviour of Pacific salmon fry during their downstream migration to freshwater and saltwater nursery areas. By J. McDonald, p. 655–676.

An attempt to improve trout fishing in a New Brunswick lake by deferment of opening of angling season. By M. W. Smith, p. 677–685.

An aquarium for maintaining constant prey population densities in studies of predator–prey interactions. By C. F. Nicholls and E. A. Doxtator, p. 687–688.

Underwater television observations of the swimming speed and behaviour of captive herring. By Vivien M. Brawn, p. 689–698.

Seasonal and diurnal vertical distribution of herring (*Clupea harengus* L.) in Passamaquoddy Bay, N.B. By Vivien M. Brawn, p. 699–711.

Effects of proposed Passamaquoddy power project on anadromous fishes in Canadian waters. By C. J. Kerswill, p. 713–720.

Notes

Temperature tolerance of unacclimated herring (*Clupea harengus* L.). By Vivien M. Brawn. p. 721–823.

Survival of herring (*Clupea harengus* L.) in water of low salinity. By Vivien M. Brawn, p. 725–726.

Current measurements in Passamaquoddy Bay and the Bay of Fundy 1957 and 1958. By W. D. Forrester, p. 727–729.

Records of uncommon fishes from waters off the Maritime Provinces of Canada. By A. H. Leim, p. 731–733.

Explorations for herring in the Bay of Fundy and Gulf of Maine. By S. N. Tibbo and V. M. Brawn, p. 735–737.

A note on two stocks of steelhead trout (*Salmo gairdneri*) in Capilano River, British Columbia. By S. B. Smith, p. 739–742.

Issue No. 6 (*published December 30, 1960*)

Drift-bottle experiments in the Quoddy Region, Bay of Fundy. By J. R. Chevrier and R. W. Trites, p. 743–762.

Studies on the life-history of the ascarid *Porrocaecum decipiens* in the Bras d'Or Lakes, Nova Scotia, Canada. By D. M. Scott and W. F. Black, p. 763–774.

Age, growth and sexual maturity of cod (*Gadus morhua* L.) in the Newfoundland area, 1947–1950. By A. M. Fleming, p. 775–809.

Keeping quality of Pacific coast dogfish. II. By B. A. Southcott, R. H. Moyer, E. G. Baker, and H. L. A. Tarr, p. 811–814.

Economic study of the herring fishery of Charlotte County, New Brunswick 1956–1957. By W. F. Doucet, p. 815–870.

Actions and interactions of temperature, light intensity and nutrient concentration on the growth of the green alga, *Chlamydomonas reinhardi* Dangeard. By Alen Milne McCombie, p. 871–894.

Biosynthesis of trimethylammonium compounds in aquatic animals. I. Formation of trimethylamine oxide and betaine from C^{14}-labelled compounds by lobster (*Homarus americanus*). By E. Bilinski, p. 895–902.

The effect of marine products on the blood cholesterol levels in man and in animals. A review. By J. D. Wood, p. 903–912.

Seasonal variation in the collagen content of Pacific herring tissues. By J. R. McBride, R. A. MacLeod, and D. R. Idler, p. 913–918.

Comparison of growth rates for native and hatchery-stocked populations of *Esox masquinongy* in Nogies Creek, Ontario. By Barry S. Muir, p. 919–927.

A population of dwarf coastrange sculpins (*Cottus aleuticus*). By W. E. Ricker, p. 929–932.

Further study of larval herring (*Clupea harengus* L.) in the Bay of Fundy and Gulf of Maine. By S. N. Tibbo and J. E. Henri Légaré, p. 933–942.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 943–944.

Index to Volume 17, p. 945–953.

Volume 18 (1961)

Issue No. 1 (*published March 10, 1961*)

Zooplankton studies at Ocean Weather Station "P" in the northeast Pacific Ocean. By C. D. McAllister, p. 1–29.

Contribution to the biology of herring (*Clupea harengus* L.) in Newfoundland waters. By Steinar Olsen, p. 31–46.

A method for preparing glycerin-stored otoliths for age determination. By G. H. Lawler and G. P. McRae, p. 47–50.

Phytoplankton of the *Calanus* Expeditions in Hudson Bay, 1953 and 1954. By Adam Bursa, p. 51–83.

The quality of fish flour, liver meal, and visceral meal as sources of dietary protein. By B. A. Larsen and W. W. Hawkins, p. 85–91.

The liquefaction of British Columbia herring by ensilage, proteolytic enzymes and acid hydrolysis. By J. R. McBride, D. R. Idler, and R. A. MacLeod, p. 93–112.

The protein nutritive value of "liquid herring" preparations. By B. E. March, J. Biely, J. R. McBride, D. R. Idler, and R. A. MacLeod, p. 113–116.

Scale to length ratio, age and growth of Atlantic salmon in Miramichi fisheries. By Robert B. Kerr, p. 117–124.

Liver glycogen reserves of interacting resident and introduced trout populations. By P. W. Hochachka, p. 125–135.

Slicing of fillets as an aid in detection and removal of codworms from Atlantic cod fillets. By H. E. Power, p. 137–140.

Notes

Northward range extension of the flathead chub and trout-perch to Aklavik. N.W.T. By D. E. McAllister, p. 141.

Lipid hydrolysis in frozen cod muscle. By E. G. Bligh, p. 143–145.

Issue No. 2 (*published June 8, 1961*)

Artificial drying of Cambodian fish. By R. Legendre, p. 147–162.

Probable effects of proposed Passamaquoddy Power Project on oceanographic conditions. By R. W. Trites, p. 163–201.

Competition for food between redside shiners (*Richardsonius balteatus*) and rainbow trout (*Salmo gairdneri*) in two British Columbia lakes. By R. E. Johannes and P. A. Larkin, p. 203–220.

Herring movements in the Bay of Fundy and Gulf of Maine, 1957 and 1958. By R. A. McKenzie and S. N. Tibbo, p. 221–252.

Oceanographic activities of the Polar Continental Shelf Project. By A. E. Collin, p. 253–258.

Correlation of morphological and intra-ocular measurements in the Atlantic salmon (*Salmo salar*) yearling. By M. A. Ali, P. Copes, and W. R. Stevenson, p. 259–272.

A note on the morphology of the basins of the Great Lakes. By D. V. Anderson, p. 273–277.

Notes

Occurrence of two species of juvenile rockfish in Queen Charlotte Sound. By C. R. Hitz, p. 279–281.

Abnormalities in Lake Erie whitefish. By G. H. Lawler, p. 283–284.

Biosynthesis of trimethylammonium compounds in aquatic animals. II. Role of betaine in the formation of trimethylamine oxide by lobster (*Homarus americanus*). By E. Bilinski, p. 285–286.

Decay of hexachlorocyclohexane in sea water. By A. E. Werner and M. Waldichuk, p. 287–289.

A new record of the long-finned cod, *Antimora rostrata* Gunther, from British Columbia waters. By K. S. Ketchen and R. M. Wilson, p. 291.

Egg counts of Lake Erie whitefish. By G. H. Lawler, p. 293–294.

Issue No. 3 (*published June 27, 1961*)

Spoilage of fish in the vessels at sea. 7. Further studies on seasonal variations in the landed quality of gutted, trawler-caught Atlantic cod and haddock. By C. H. Castell and Jacqueline G. Giles, p. 295–302.

Grading fish for quality. 4. Variations in the relation between trimethylamine values and grades for gutted, trawler-caught Atlantic cod and haddock. By C. H. Castell, Maxine F. Elson, and Jacqueline G. Giles, p. 303–310.

Surface temperature and salinity off the Washington and British Columbia coasts, August. 1958 and 1959. By Felix Favorite, p. 311–319.

Observations on *post mortem* biochemical changes in fish muscle in relation to *rigor mortis*. By N. Tomlinson, E. S. Arnold, Eve Roberts, and S. E. Geiger, p. 321–336.

Variability in aerial counts of spawning salmon. By Donald E. Bevan, p. 337–348.

Preparation of deoxynucleosides, purine and pyrimidine bases and deoxyribose 1-phosphate from deoxyribonucleic acid employing salmon enzyme systems. By Abdul Mannan and H. L. A. Tarr, p. 349–366.

A comparison of three methods of inactivating lobster claws. By D. G. Wilder and D. W. McLeese, p. 367–375.

Dietary marine fish oils and cholesterol metabolism. 3. The comparative hypocholesterolemic activities of fish oil and vitamin A. By J. D. Wood and J. Topliff, p. 377–382.

Radioactive iron as a fish mark. By D. P. Scott, p. 383–391.

Plasma proteins of coho salmon, *Oncorhynchus kisutch*, as separated by zone electrophoresis. By W. E. Vanstone and F. Chung-Wai Ho, p. 393–399.

Influence of size upon the adaptation of steelhead trout (*Salmo gairdneri*) and chum salmon (*Oncorhynchus keta*) to sea water. By Arthur H. Houston, p. 401–415.

Comparison of largest Great Slave Lake fish with North American records. By J. J. Keleher, p. 417–421.

The lake trout of Lac la Ronge, Saskatchewan. By D. S. Rawson, p. 423–462.

A limnological reconnaissance of a Nova Scotian brown-water lake. By M. W. Smith, p. 463–478.

Issue No. 4 (*published September 12, 1961*)

Obituary—Donald Strathearn Rawson, 1905–1961, p. 479–482.

Proximate composition of Canadian Atlantic fish. I. Variation in composition of different sections of the flesh of Atlantic halibut (*Hippoglossus hippoglossus*). By A. Mannan, D. I. Fraser, and W. J. Dyer, p. 483–493.

Proximate composition of Canadian Atlantic fish. II. Mackerel, tuna and swordfish. By A. Mannan, D. I. Fraser, and W. J. Dyer, p. 495–499.

The amino acid composition of cod tropomyosin. By P. L. Hoogland, H. C. Freeman, Beryl Truscott, and A. E. Waddell, p. 501–512.

Observations on the ecology of the Pacific cod (*Gadus macrocephalus*) in Canadian waters. By K. S. Ketchen, p. 513–558.

Two epidemics of apparent kidney disease in cultured pink salmon (*Oncorhynchus gorbuscha*). By Gordon R. Bell, p. 559–562.

The annual oceanographic cycle at Igloolik in the Canadian Arctic. II. The phytoplankton. By Adam S. Bursa, p. 563–615.

A preliminary study of the energy budget of Lake Ontario. By G. K. Rodgers and D. V. Anderson, p. 617–636.

Notes

Muscle proteins of Pacific salmon (*Oncorhynchus*). I. A note on the separation of muscle proteins soluble in low ionic strength salt solutions. By H. Tsuyuki and Eve Roberts. p. 637–640.

Temperature and the biochemical processes occurring during rigor mortis in cod muscle. By Doris I. Fraser, Somsee Punjamapirom, and W. J. Dyer, p. 641–644.

Issue No. 5 (*published November 10, 1961*)

Studies on estimation of mortalities. I. Comparison of a method described by Beverton and Holt and a new linear formula. By J. E. Paloheimo, p. 645–662.

The copepods *Calanus glacialis* Jaschnov and *Calanus finmarchicus* (Gunnerus) in Canadian arctic–subarctic waters. By E. H. Grainger, p. 663–678.

Comparative osteology of representative salmonid fishes, with particular reference to the grayling (*Thymallus arcticus*) and its phylogeny. By Carroll R. Norden, p. 679–791.

A systematic study of the *Salvelinus alpinus* complex in North America. By J. D. McPhail. p. 793–816.

Detection of incomplete reporting of tags. By Gerald J. Paulik, p. 817–832.

The light pickle salting of cod. By P. B. Crean, p. 833–844.

The partial desalting of salted cod. By P. B. Crean, p. 845–850.

Chemical characteristics of salted cod. By A. Cardin, E. Bilinski, F. Maltais, M. A. Bordeleau. and (the late) A. Laframboise, p. 851–858.

Effect of estradiol monobenzoate on some serum constituents of maturing sockeye salmon (*Oncorhynchus nerka*). By F. Chung-Wai Ho, and W. E. Vanstone, p. 859–864.

Fatty alcohols from marine oils and segregated esters. By P. M. Jangaard and R. G. Ackman. p. 865–872.

Growth and age determination of the Pacific edible crab *Cancer magister* Dana. By T. H. Butler, p. 873–891.

Issue No. 6 (*published January 23, 1962*)

Proximate composition of Canadian Atlantic fish. III. Sectional differences in the flesh of a species of Chondrostei, one of Chimaerae, and of some miscellaneous teleosts. By D. I. Fraser, A. Mannan, and W. J. Dyer, p. 893–905.

Oceanographic features of inlets in the British Columbia mainland coast. By G. L. Pickard, p. 907–999.

On the chemical composition of eleven species of marine phytoplankters. By T. R. Parsons, K. Stephens, and J. D. H. Strickland, p. 1001–1016.

On the pigment composition of eleven species of marine phytoplankters. By T. R. Parsons, p. 1017–1025.

Some oceanographic features of Juan de Fuca Strait. By R. H. Herlinveaux and J. P. Tully, p. 1027–1071.

Temporal changes of salinity, temperature, and dissolved oxygen content of the water at Station "P" in the northeast Pacific Ocean, and some of their determining factors. By Susumu Tabata, p. 1073–1124.

Order of succession of different types of infraoral lamina in landlocked sea lamprey (*Petromyzon marinus*). By V. D. Vladykov and G. N. Mukerji, p. 1125–1143.

Ocean temperatures and their relation to albacore tuna (*Thunnus germo*) distribution in waters off the coast of Oregon, Washington and British Columbia. By Dayton L. Alverson, p. 1145–1152.

Seasonal fishing quality provided by the natural reproduction of speckled trout in three Ontario ponds. By Hugh R. McCrimmon, p. 1153–1158.

Diving and photographic techniques for observing and recording salmon activities. By D. V. Ellis, p. 1159–1166.

Notes

Additional records of the Argentinid fish, *Leuroglossus stilbius* Gilbert, from British Columbia, with remarks on its taxonomy. By W. E. Barraclough and T. H. Butler, p. 1167–1169.

Index to Volume 18, p. 1171–1178.

Volume 19 (1962)

Issue No. 1 (*published January 31, 1962*)

Oceanography of Saanich Inlet in Vancouver Island, British Columbia. By R. H. Herlinveaux, p. 1–37.

Physical characteristics and chemical composition of two subspecies of lake trout. By Claude E. Thurston, p. 39–44.

A review of the temperature and salinity structures in the approaches to Vancouver Island, British Columbia. By R. K. Lane, p. 45–91.

The Pollett apron seine. By P. F. Elson, p. 93–100.

Hydrographic and meteorological factors affecting shellfish toxicity at Head Harbour, New Brunswick. By A. Prakash and J. C. Medcof, p. 101–112.

Growth and reproduction of the longnose sucker, *Catostomus catostomus* (Forster), in Great Slave Lake. By Roy H. D. Harris, p. 113–126.

Glycogen stores in trout tissues before and after stream planting. By P. W. Hochachka and A. C. Sinclair, p. 127–136.

Preliminary studies on the visible migrations of adult salmon. By D. V. Ellis, p. 137–148.

Radioactive caesium as a fish and lamprey mark. By D. P. Scott, p. 149–157.

A method of estimating mortality rates from change in composition. By Robert H. Lander, p. 159–168.

Notes

Fat hydrolysis in frozen fillets of lingcod and Pacific gray cod. By J. D. Wood and S. A. Haqq, p. 169–171.

Issue No. 2 (*published April 19, 1962*)

Comparison of inlet and outlet spawning runs of rainbow trout in Loon Lake, British Columbia. By G. F. Hartman, T. G. Northcote, and C. C. Lindsey, p. 173–200.

Migratory behaviour of juvenile rainbow trout, *Salmo gairdneri*, in outlet and inlet streams of Loon Lake, British Columbia. By T. G. Northcote, p. 201–270.

The distribution of animals in the eastern North Pacific and its relationship to physical and chemical conditions. By William Aron, p. 271–314.

Tag failure associated with a net fishery as a source of experimental error. By Robert R. Parker, p. 315–320.

Dogfish gelatin. By Shirley E. Geiger, Eve Roberts, and N. Tomlinson, p. 321–326.

Olfactory perception in juvenile salmon. I. Observations on response of juvenile sockeye to extracts of foods. By J. R. McBride, D. R. Idler, R. E. E. Jonas, and N. Tomlinson, p. 327–334.

Photographing halibut otoliths for measuring growth zones. By G. Morris Southward, p. 335–338.

A method of calculating body lengths from otolith measurements for Pacific halibut and its application to Portlock–Albatross grounds data between 1935 and 1957. By G. Morris Southward, p. 339–362.

Notes

First record of the great white shark (*Carcharodon carcharias*) from British Columbia. By Gordon C. Pike, p. 363.

Issue No. 3 (*published June 19, 1962*)

Diet, glycogen reserves and resistance to fatigue in hatchery rainbow trout. Part II. By the late Richard B. Miller and Frances Miller, p. 365–375.

Zooplankton of Foxe Basin in the Canadian arctic. By E. H. Grainger, p. 377–400.

The occurrence of the king crab, *Paralithodes camtschatica* (Tilesius), and of *Lithodes aequispina* Benedict in British Columbia. By T. H. Butler and Josephine F. L. Hart, p. 401–408.

Changes in glycogen, pyruvate and lactate in rainbow trout (*Salmo gairdneri*) during and following muscular activity. By Edgar C. Black, Anne Robertson Connor, Kwok-Cheung Lam, and Wing-Gay Chiu, p. 409–436.

Enumeration of coliform bacteria in light salted fish brines. By H. P. Dussault, p. 437–444.

Cod tagging in the Newfoundland area during 1947 and 1948. By Wilfred Templeman and A. M. Fleming, p. 445–487.

Observations on the isopod *Mesidotea entomon* in the western Canadian Arctic Ocean. By Hugh McCrimmon and Joseph Bray, p. 489–496.

On the fecundity of Pacific cod (*Gadus macrocephalus* Tilesius) from Hecate Strait, British Columbia. By J. Arthur Thomson, p. 497–500.

The periodicity of *Melosira islandica* O. Müll. in Great Slave Lake. By J. W. G. Lund, p. 501–504.

Biosynthesis of trimethylammonium compounds in aquatic animals. III. Choline metabolism in marine crustacea. By E. Bilinski, p. 505–510.

Obituary—Alexander Henry Leim. p. 511–514.

Notes

Trichodinids from the gills of a new host, the lingcod *Ophiodon elongatus*. By Gordon Bell. p. 515–516.

New records for occurrence of the white-tip shark, *Pterolamiops longimanus* (Poey), and the dolphin, *Coryphaena hippurus* L., in the northwest Atlantic. By S. N. Tibbo, p. 517–518.

A note concerning the origin and quantitative distribution of acid-soluble phosphorus compounds and free sugars in fish muscle. By H. L. A. Tarr and M. Leroux, p. 519–520.

Issue No. 4 (*published August 9, 1962*)

The effect of reduction of fishing effort on yield. By Syoiti Tanaka, p. 521–529.

Comparison of ocean growth and mortality of sockeye salmon during their last two years. By W. E. Ricker, p. 531–560.

Estimations of ocean mortality rates for Pacific salmon (*Oncorhynchus*). By Robert R. Parker, p. 561–589.

Proteins in fish muscle. 17. Fractionation of aqueous extracts with zinc acetate. By J. R. Dingle, J. A. Hines, and J. M. Neelin, p. 591–604.

Conversion of the free fatty acids of cod oil to methyl esters in situ. By R. G. Ackman, L. R. Gallay, P. M. Jangaard, and M. L. Hughes, p. 605–614.

Effect of tetracycline antibiotics on objective and subjective fish quality tests. By J. W. Boyd and B. A. Southcott, p. 615–618.

Blood *p*H and mortality in rainbow trout (*Salmo gairdnerii)* and sockeye salmon (*Oncorhynchus nerka*). By R. E. E. Jonas, Harcharan S. Sehdev, and N. Tomlinson, p. 619–624.

Skin-diving observations of Atlantic salmon and brook trout in the Miramichi River, New Brunswick. By Miles H. A. Keenleyside, p. 625–634.

Physical properties and hydrostatic function of the swimbladder of herring (*Clupea harengus* L.). By Vivien M. Brawn, p. 635–656.

Quantitative estimations of temporal variations of zooplankton off the coast of Washington and British Columbia. By Herbert F. Frolander, p. 657–675.

Decapod crustacea of the *Calanus* Expeditions in Frobisher Bay, Baffin Island, 1951. By H. J. Squires, p. 677–686.

Distinctions between the broad whitefish, *Coregonus nasus*, and other North American whitefishes. By C. C. Lindsey, p. 687–714.

Effect of food quantity on fecundity of rainbow trout, *Salmo gairdneri*. By D. P. Scott, p. 715–731.

Notes

The phospholipid content of lingcod muscle during frozen storage. By R.E.E. Jonas and N. Tomlinson, p. 733–734.

Issue No. 5 (*published September 20, 1962*)

Distribution and survival of herring larvae (*Clupea pallasi* Valenciennes) in British Columbia waters. By J. C. Stevenson, p. 735–810.

Record of the oceanic puffer, *Lagocephalus lagocephalus* (L.), family Tetraodontidae, from Newfoundland. By Wilfred Templeman, p. 811–814.

Migration and feeding of the gray whale (*Eschrichtius gibbosus*). By Gordon C. Pike, p. 815–838.

Air blowing of cod liver oil and other marine oils. By P. M. Jangaard, p. 839–849.

Seasonal changes in feeding of coho and chinook (spring) salmon in southern British Columbia waters. By A. Prakash, p. 851–866.

Efficiency and rate of yolk utilization by developing embryos and larvae of the Pacific sardine *Sardinops caerulea* (Girard). By Reuben Lasker, p. 867–875.

Possible effects of Passamaquoddy power project on clams, scallops and shipworms in Canadian waters. By J. C. Medcof, p. 877–889.

Record of the blue ling, *Molva byrkelange* (Walbaum), from the Newfoundland area. By Wilfred Templeman and H. J. Squires, p. 891–894.

Flow of water in the passages of Passamaquoddy Bay measured by electromagnetic method. By R. W. Trites and D. G. MacGregor, p. 895–919.

Annual cyclic changes in the physical oceanography of a British Columbia fjord. By Malvern Gilmartin, p. 921–974.

Notes

Temperature and salinity in the Quoddy region of the Bay of Fundy. By R. W. Trites, p. 975–978.

Predator–prey relationships in pikes (Esocidae). By E. J. Crossman, p. 979–980.

On the feeding and growth of young herring (*Clupea harengus* L.) in captivity. By Naresh Das and S. N. Tibbo, p. 981–983.

A relationship between growth, hatching and spawning season in Canadian Atlantic herring (*Clupea harengus* L.). By T. R. Graham, p. 985–987.

Issue No. 6. (*published December 14, 1962*)

Bacteriological studies of freshwater fish. II. Furunculosis in Ontario fish in natural waters. By L. Rabb and L. A. McDermott, p. 989–995.

Glycogen concentration and post mortem loss of adenosine triphosphate in fish and mammalian skeletal muscle. A review. By N. Tomlinson and S. E. Geiger, p. 997–1003.

Relation between water temperature and gastric digestion of largemouth bass (*Micropterus salmoides* Lacépède). By Gyula Molnár and István Tölg, p. 1005–1012.

The occurrence of the longjaw cisco, *Leucichthys alpenae*, in Lake Erie. By W. B. Scott and Stanford H. Smith, p. 1013–1023.

Some considerations in the study of respiratory metabolism in fish, particularly salmon. By J. R. Brett, p. 1025–1038.

An improved method for the preparation of fish protein concentrate from cod. By H. E. Power, p. 1039–1045.

Aggressive behaviour in juvenile coho salmon as a cause of emigration. By D. W. Chapman, p. 1047–1080.

The free fatty acids of cod oil. 1. Anomalous composition by fatty acid chain length. By R. G. Ackman, R. D. Burgher, and M. L. Hughes, p. 1081–1084.

The relative efficiency of nylon and cotton gill nets for taking lake trout in Lake Superior. By Richard L. Pycha, p. 1085–1094.

The enzymic digestion of cod tropomyosin. By B. Truscott, P. L. Hoogland, P. H. Odense, and A. E. Waddell, p. 1095–1104.

The relict fauna of Greiner Lake, Victoria Island, N.W.T., Canada. By Lionel Johnson, p. 1105–1120.

Machine computations of mass transport in the North Pacific Ocean. By N. P. Fofonoff, p. 1121–1141.

A method of analysing a polymodal frequency distribution and its application to the length distribution of the porgy, *Taius tumifrons* (T. and S.). By Syoiti Tanaka, p. 1143–1159.

Notes

Observations on the morphology and optical properties of the adipose eyelid of fishes. By Kenneth W. Stewart, p. 1161–1162.

Amphipods in low-oxygen marine waters adjacent to a sulphite pulp mill. By M. Waldichuk and E. L. Bousfield, p. 1163–1165.

Range extensions for two species of caridean shrimps (order Decapoda) from the northeastern Pacific. By Lael L. Ronholt, p. 1167.

Egg masses and early developmental stages of the scorpaenid fish, *Sebastolobus*. By W. G. Pearcy, p. 1169–1173.

Age of young sablefish, *Anoplopoma fimbria* (Pallas) 1811. By H. Heyamoto, p. 1175–1177.

Index to Volume 19, p. 1179–1185.

Volume 20 (1963)

Issue No. 1 (*published March 1, 1963*)

Foreword by J. L. Kask, p. (i).

The nature of an unusual amino acid–pyrimidine complex from the cod parasite, *Porrocaecum decipiens*. By H. C. Freeman, P. L. Hoogland, and P. H. Odense, p. 1–11.

Sampling the catch of a research vessel. By J. E. Paloheimo and L. M. Dickie, p. 13–25.

Geographic variation in North American ninespine sticklebacks, *Pungitius pungitius*. By J. D. McPhail, p. 27–44.

Red and white muscle of fish in relation to rigor mortis. By Hans Buttkus, p. 45–58.

Estimation of catchabilities and population sizes of lobsters. By J. E. Paloheimo, p. 59–88.

The air blowing of cod liver oil. II. Changes in fatty acid composition as determined by gas–liquid chromatography. By P. M. Jangaard, R. G. Ackman, R. D. Burgher, and M. L. Hughes, p. 89–94.

Resumption of feeding by and survival of adult sockeye salmon (*Oncorhynchus nerka*) following advanced gonad development. By J. R. McBride, U. H. M. Fagerlund, M. Smith, and N. Tomlinson, p. 95–100.

Species differences of some members of Salmonidae based on their muscle myogen patterns. By H. Tsuyuki and E. Roberts, p. 101–104.

Comparative ecology of two sympatric species of dace (*Rhinichthys*) in the Fraser River system, British Columbia. By J. H. Gee and T. G. Northcote, p. 105–118.

Oceanography of the subarctic Pacific Ocean. By Michitaka Uda, p. 119–179.

Apparatus for measuring the energy input in cutting fibers of fish muscle. By Hans Buttkus, p. 181–186.

The bound nucleotides of freshly frozen and severely denatured frozen lingcod muscle. By Neil Tomlinson and S. E. Geiger, p. 187–194.

An estimation of the mortality rates in a population of *Tilapia esculenta* Graham (Pisces, Cichlidae) in Lake Victoria, East Africa. By D. J. Garrod, p. 195–227.

Nutrient composition and evaluation of British Columbia whole herring meal. By B. E. March, J. Biely, and H. L. A. Tarr, p. 229–238.

Obituary—Donald Johnston Milne. p. 239–242.

Notes

Systaltic muscular action of the kidney tubules of flounder. By P. M. Townsley and M. A. Scott, p. 243–244.

A preliminary investigation of the blubber oil from the Atlantic bottlenose whale. By P. M. Jangaard, R. D. Burgher, and R. G. Ackman, p. 245–247.

Temperature and rate of hatching of *Triaenophorus* eggs. By N. H. F. Watson and G. H. Lawler, p. 249–251.

Additional note on the oceanic puffer *Lagocephalus lagocephalus* (L.). By W. Templeman, p. 253.

Issue No. 2 (*published April 15, 1963*)

J. R. Dymond—An appreciation. p. 255–256.

Big effects from small causes: two examples from fish population dynamics. By W. E. Ricker, p. 257–264.

Growth and mortality of whitefish in three unexploited lakes in northern Canada. By W. A. Kennedy, p. 265–272.

Three records of the black scabbardfish, *Aphanopus carbo* Lowe, from the Canadian region of the western Atlantic. By Wilfred Templeman and H. J. Squires, p. 273–278.

Summer food of lake whitefish, *Coregonus clupeaformis* Mitchill, from Heming Lake, Manitoba. By N. H. F. Watson, p. 279–286.

Some aspects of olfactory and visual responses in Pacific salmon. By J. R. Brett and C. Groot, p. 287–303.

Movements, growth and survival of marked and tagged lobsters liberated in Egmont Bay, Prince Edward Island. By D. G. Wilder, p. 305–318.

The movement of tagged Great Slave Lake fish. By J. J. Keleher, p. 319–326.

Influence of pond formation on brook trout movements and angling success. By M. W. Smith, p. 327–345.

Organogenesis of the opercular apparatus in *Salvelinus fontinalis* (Mitchill). By L. R. Day, p. 347–372.

Respiration of the Atlantic cod. By Richard L. Saunders, p. 373–386.

Resistance of four freshwater crustaceans to lethal high temperature and low oxygen. By J. B. Sprague, p. 387–415.

The biology and taxonomy of the burbot, *Lota lota*, in Heming Lake, Manitoba. By G. H. Lawler, p. 417–433.

Biological changes in herring stocks following an epizootic. By S. N. Tibbo and T. R. Graham, p. 435–449.

Causes of mass mortalities of scallops (*Placopecten magellanicus*) in the southwestern Gulf of St. Lawrence. By L. M. Dickie and J. C. Medcof, p. 451–482.

Lethal temperatures of the developmental stages of the sea lamprey, *Petromyzon marinus* L. By R. W. McCauley, p. 483–490.

Intraseasonal growth in Lake Superior lake trout. By A. H. Lawrie, p. 491–496.

Discards of fish at sea by northern New Brunswick draggers. By Yves Jean, p. 497–524.

Some effects of simultaneous variation in salinity, temperature and dissolved oxygen on the resistance of young coho salmon to a toxic substance. By D. F. Alderdice, p. 525–550.

Seasonal movements of the winter flounder, *Pseudopleuronectes americanus* (Walbaum), on the Atlantic coast. By F. D. McCracken, p. 551–586.

Notes

Downstream movements of brook sticklebacks, *Eucalia inconstans* (Kirtland), in a small southern Ontario stream. By A. Lamsa, p. 587–589.

Issue No. 3 (*published July 10, 1963*)

Observations on the oil and component fatty acids of the oil from Newfoundland capelin. By R. G. Ackman, P. M. Jangaard, R. D. Burgher, M. L. Hughes, and W. A. MacCallum, p. 591–596.

Effects of artificial propagation and the weather on recruitment in the Lake Ontario whitefish fishery. By W. J. Christie, p. 597–646.

Interspecific competition and exploitation. By P. A. Larkin, p. 647–678.

Marine fish tissue culture. By P. M. Townsley, H. G. Wright, and M. A. Scott, p. 679–684.

Effects of temperature on growth of zooplankton, and the adaptive value of vertical migration. By Ian A. McLaren, p. 685–727.

Amino acid composition of representatives of eight bacterial genera with reference to aquatic productivity. By James E. Stewart, P. L. Hoogland, H. C. Freeman, and A. E. J. Waddell, p. 729–734.

The spatial distribution of fish in gill nets. By A. H. Berst and A. M. McCombie, p. 735–742.

The in-vitro maturation of the parasitic nematode, *Terranova decipiens*, from cod muscle. By P. M. Townsley, H. G. Wight, M. A. Scott, and M. L. Hughes, p. 743–747.

Sympatric occurrence of two species of humpback whitefish in Squanga Lake, Yukon Territory. By C. C. Lindsey, p. 749–767.

Observations on behaviour of juvenile brown trout in a stream aquarium during winter and spring. By G. F. Hartman, p. 769–787.

Temperature, salinity and plankton in the eastern North Atlantic and coastal waters of Britain. 1957. I. The characterization and distribution of surface waters. By B. McK. Bary, p. 789–826.

The uptake and detoxification of C^{14}-labelled DDT in Atlantic salmon, *Salmo salar*. By F. H. Premdas, p. 827–837.

Notes

Application of the Paloheimo linear equation for estimating mortalities to a seasonal fishery. By Barry S. Muir and Harold White, p. 839–840.

A note on the upper lethal temperature of eggs of two species of *Triaenophorus*. By N. H. F. Watson, p. 841–844.

On the need for measuring the buffering capacity of fish blood. By Peter W. Hochachka, p. 845–847.

A note on *Gadus* (*Micromesistius*) *poutassou* (Risso) from western Atlantic waters. By W. B. Scott, p. 849–850.

First record of the thornback sculpin, *Paricelinus hopliticus*, Eigenmann and Eigenmann, in British Columbia waters. By W. E. Barraclough and K. S. Ketchen, p. 851–852.

First records of *Tetronychoteuthis dussumieri* (d'Orbigny) (Cephalopoda; Onychoteuthidae) from the northwest Atlantic. By E. I. S. Rees and Malcolm R. Clarke, p. 853–854.

Migrations of haddock between the Gulf of St. Lawrence and offshore Nova Scotian banks. By F. D. McCracken, p. 855–857.

Issue No. 4 (*published August 23, 1963*)

Influence of light and temperature on the reproductive cycle of the eastern brook trout. *Salvelinus fontinalis* (Mitchill). By Nancy E. Henderson, p. 859–897.

Extent of atresia in maturing ovaries of the eastern brook trout, *Salvelinus fontinalis* (Mitchill). By Nancy E. Henderson, p. 899–908.

Extractives of fish muscle. 3. Amounts, sectional distribution, and variations of fat, water-solubles, protein and moisture in cod (*Gadus morhua* L.) fillets. By N. Dambergs, p. 909–918.

Observations on the migration of young sockeye salmon (*Oncorhynchus nerka*) through a large, complex lake system. By W. E. Johnson and C. Groot, p. 919–938.

A model of seawater structure near the west coast of Vancouver Island, British Columbia. By Robert K. Lane, p. 939–967.

The effect of tagging with Petersen disc tags on the swimming ability of fingerling steelhead trout (*Salmo gairdneri*). By Dan W. Clancy, p. 969–981.

Source of paralytic shellfish toxin in the Bay of Fundy. By A. Prakash, p. 983–996.

Accelerated cooling of wet, heavily salted fish. By A. L. Wood, p. 997–1000.

Life history of redside shiners, *Richardsonius balteatus*, with particular reference to movements in and out of Sixteen-mile Lake streams. By C. C. Lindsey, p. 1001–1030.

Temperature, salinity and plankton in the eastern North Atlantic and coastal waters of Britain, 1957. II. The relationships between species and water bodies. By B. McK. Bary, p. 1031–1065.

An investigation of herring (*Clupea harengus* L.) spawning using free-diving techniques. By S. N. Tibbo, D. J. Scarratt, and P. W. G. McMullon, p. 1067–1079.

Notes

A sea water aquarium for marine animal experiments. By James E. Stewart and H. E. Power, p. 1081–1084.

Common porpoise from the stomach of a Greenland shark. By G. R. Williamson, p. 1085–1086.

On the demersal quality of the fertilized eggs of Pacific cod, *Gadus macrocephalus* Tilesius. By J. Arthur Thomson, p. 1087–1088.

Measurements of immature stages of *Triaenophorus*. By G. H. Lawler and N. H. F. Watson, p. 1089–1093.

A further record of the blacktail snailfish, *Careproctus melanurus* Gilbert, from British Columbia waters. By C. R. Forrester and R. M. Wilson, p. 1095–1096.

An occurrence of opah, *Lampris regius* (Bonnaterre), in the Northwest Atlantic. By R. A. McKenzie and S. N. Tibbo, p. 1097–1099.

An occurrence of dusky sharks, *Carcharhinus obscurus*, (LeSueur) 1818, in the Northwest Atlantic. By S. N. Tibbo and R. A. McKenzie, p. 1101–1102.

An arrangement for automatically and reproducibly controlling and varying illumination in biological experiments. By James E. Stewart, p. 1103–1107.

Issue No. 5 (*published October 31, 1963*)

Oceanographic characteristics of inlets of Vancouver Island, British Columbia. By G. L. Pickard, p. 1109–1144.

Glycolysis in lingcod muscle during frozen storage. By N. Tomlinson, R. E. E. Jonas, and S. E. Geiger, p. 1145–1152.

Composition and palatability of porbeagle flesh. By W. J. Dyer, D. I. Fraser, and S. N. Tibbo, p. 1153–1158.

Vertebral numbers of American plaice, *Hippoglossoides platessoides* (Fabricius), in the Northwest Atlantic. By T. K. Pitt, p. 1159–1181.

Brine spray frozen tuna. Sodium, potassium, lactic acid and acid-soluble phosphorus in the muscle, and the influence thereon of thawing and precooking. By N. Tomlinson and S. E. Geiger, p. 1183–1187.

The invasion of the lower Great Lakes by the white perch, *Roccus americanus* (Gmelin). By W. B. Scott and W. J. Christie, p. 1189–1195.

Tidal calibration of the Hecate Model. By W. H. Bell and N. Boston, p. 1197–1212.

Vital statistics of *Esox masquinongy* in Nogies Creek, Ontario. I. Tag loss, mortality due to tagging, and the estimate of exploitation. By Barry S. Muir, p. 1213–1230.

Factors influencing the effectiveness of fresh fish washing operations. By W. A. MacCallum, M. W. Mullan, and Isabel N. Plaunt, p. 1231–1244.

Effect of photoperiods on the reactions of juvenile Atlantic salmon (*Salmo salar* L.) to light stimuli. By A. T. Pinhorn and C. W. Andrew, p. 1245–1266.

Pollock (*Pollachius virens* (L.)) in the Bay of Fundy. By D. H. Steele, p. 1267–1314.

Pycnogonida of the North American Arctic. By Joel W. Hedgpeth, p. 1315–1348.

Obituary—Edith Berkeley. By W. A. Clemens, p. 1349–1352.

Notes

An occurrence of mako sharks, *Isurus oxyrinchus*, Rafinesque 1810, in the Canadian Atlantic. By S. N. Tibbo, R. A. McKenzie, and W. B. Scott, p. 1353–1354.

Issue No. 6 (*published December 27, 1963*)

Body fluid regulation in smolting Atlantic salmon. By Arthur H. Houston and Lawrence T. Threadgold, p. 1355–1369.

On the problem of maximum yield from North Pacific sockeye salmon stocks. By Robert R. Parker, p. 1371–1396.

Studies on the life history and ecology of the bigmouth buffalo, *Ictiobus cyprinellus* (Valenciennes). By R. P. Johnson, p. 1397–1429.

Use of coloured tags in fish population estimates. By G. H. Lawler and G. F. M. Smith, p. 1431–1434.

2-Phenoxyethanol as a general anaesthetic for sockeye salmon. By H. S. Sehdev, J. R. McBride, and U. H. M. Fagerlund, p. 1435–1440.

Effects of formalin on length and weight of fishes. By Robert R. Parker, p. 1441–1455.

Olfactory perception in migrating salmon. III. Stimulants for adult sockeye salmon (*Oncorhynchus nerka*) in home stream waters. By U. H. M. Fagerlund, J. R. McBride, M. Smith, and N. Tomlinson, p. 1457–1463.

Fecundity of Grand Bank haddock. By V. M. Hodder, p. 1465–1487.

Minke whales, *Balaenoptera acutorostrata* Lacépède, of the western North Atlantic. By D. E. Sergeant, p. 1489–1504.

A redescription of the rare cottid fish, *Artedius meanyi*, new to the fauna of British Columbia. By Richard H. Rosenblatt and Donald Wilkie, p. 1505–1511.

The batfish, *Dibranchus atlanticus* Peters, on the Canadian Atlantic slopes. By E. I. S. Rees, p. 1513–1517.

Temperature, salinity and plankton in the eastern North Atlantic and coastal waters of Britain, 1957. III. The distribution of zooplankton in relation to water bodies. By B. McK. Bary, p. 1519–1548.

Notes

A modified Petersen grab. By J. Flury, p. 1549–1550.

On the occurrence of 4,7,10,13,16-docosapentaenoic acid in saury (*Cololabis saira*) oil. By R. G. Ackman and P. M. Jangaard, p. 1551–1552.

Spring stainless steel anchor tag. By G. H. Lawler, p. 1553.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 1555.

Index to Volume 20, p. 1557–1566.

Volume 21 (1964)

Issue No. 1 (*published February 6, 1964*)

Further information on sustained yields from fluctuating environments. By P. A. Larkin and W. E. Ricker, p. 1–7.

Laboratory observations on embryonic development and larvae of the Pacific cod (*Gadus macrocephalus* Tilesius). By C. R. Forrester, p. 9–16.

Lethal concentrations of copper and zinc for young Atlantic salmon. By J. B. Sprague, p. 17–26.

Movements of young Atlantic salmon in a small stream. By Richard L. Saunders and John H. Gee, p. 27–36.

Ultraviolet irradiation of circulating refrigerated fish storage brines. By J. W. Boyd and B. A. Southcott, p. 37–43.

The origin of cold high-salinity water in Foxe Basin. By N. J. Campbell, p. 45–55.

Variations in the growth of Atlantic cod (*Gadus morhua* L.). By A. C. Kohler, p. 57–100.

Polyphosphate treatment of frozen cod. I. Protein extractability and lipid hydrolysis. By W. J. Dyer, H. Brockerhoff, R. J. Hoyle, and D. I. Fraser, p. 101–106.

Neurosine, a new oligopeptide isolated from the brain of fish and other cold-blooded vertebrates. I. Identification and partial characterization. By Morris H. Baslow, p. 107–113.

Water-thawing of frozen cod blocks. By W. A. MacCallum and D. G. Ellis, p. 115–131.

Activity cycles in the brown trout (*Salmo trutta* L.). 2. Fish artificially fed. By D. R. Swift, p. 133–138.

The cell division rates of some marine phytoplankters as a function of light and temperature. By H. R. Jitts, C. D. McAllister, K. Stephens, and J. D. H. Strickland, p. 139–157.

Marine phytoplankton photosynthesis as a function of light intensity: a comparison of methods. By C. D. McAllister, N. Shah, and J. D. H. Strickland, p. 159–181.

Temperature, salinity and plankton in the eastern North Atlantic and coastal waters of Britain, 1957. IV. The species' relationship to the water body; its role in distribution and in selecting and using indicator species. By B. McK. Bary, p. 183–202.

Notes

Observations on herring spawning off southwest Nova Scotia. By R. A. McKenzie, p. 203–204.

First record of *Mytilicola orientalis mori* in the California mussel *Mytilus californianus* Conrad. By K. K. Chew, A. K. Sparks, and S. C. Katkansky, p. 205–207.

Nessorhamphus ingolfianus Schmidt, an oceanic eel, recorded in Canadian continental waters. By E. I. S. Rees, p. 209–211.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 213–214.

Issue No. 2 (*published April 8, 1964*)

Winter cod taggings off Cape Breton and on offshore Nova Scotia banks, 1959–62. By W. R. Martin and Yves Jean, p. 215–238.

Variability in paper electrophoretic patterns of the serum of landlocked sea lamprey, *Petromyzon marinus* Linnaeus. By M. L. H. Thomas and H. R. McCrimmon, p. 239–246.

Structural homogeneity in unsaturated fatty acids of marine lipids. A review. By R. G. Ackman, p. 247–254.

Changes in glycogen and lactate levels in migrating salmonid fishes ascending experimental "endless" fishways. By Anne R. Connor, Carl H. Elling, Edgar C. Black, Gerald B. Collins, Joseph R. Gauley, and Edward Trevor-Smith, p. 255–290.

Rate of movement of populations of *Daphnia* in relation to changes in light intensity. By Donald C. McNaught and Arthur D. Hasler, p. 291–318.

Cod liver oil: component fatty acids as determined by gas–liquid chromatography. By R. G. Ackman and R. D. Burgher, p. 319–326.

Anomalous conditions in the Slope Water area in 1959. By L. V. Worthington, p. 327–333.

Observations on the milky condition in some Pacific coast fishes. By Max Patashnik and Herman S. Groninger, Jr., p. 335–346.

Early stages in the recovery to injury in the dorsal fin of the Atlantic cod (*Gadus morhua*). By P. M. Townsley and M. L. Hughes, p. 347–354.

Pagurus pubescens and a proposed new name for a closely related species in the northwest Atlantic (Decapoda: Anomura). By H. J. Squires, p. 355–365.

Cod flesh: component fatty acids as determined by gas–liquid chromatography. By R. G. Ackman and R. D. Burgher, p. 367–371.

The development of the olfactory apparatus of the grayling (*Thymallus arcticus*). By Harold Watling and Howard H. Hillemann, p. 373–396.

On the vertical transport velocity on line "P" in the eastern subarctic Pacific Ocean. By A. Acara, p. 397–407.

Obituary—Horace Nicholas Brocklesby. By Neal M. Carter, p. 409–412.

Notes

An asymmetrical pair of cod otoliths. By A. W. May, p. 413–414.

Age and growth of female sea lions in British Columbia. By D. J. Spalding, p. 415–417.

Records of shrimps (order Decapoda) from British Columbia. By T. H. Butler, p. 419–421.

Association of dimethyl sulphide with the "blackberry" problem in cod from the Labrador area. By J. C. Sipos and R. G. Ackman, p. 423–425.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 427.

Issue No. 3 (*published May 26, 1964*)

Seasonal distribution of cod (*Gadus morhua* L.) along the Canadian Atlantic coast in relation to water temperature. By Yves Jean, p. 429–460.

Neotype of *Argis lar* compared with *Argis dentata* (Crustacea, Decapoda). By H. J. Squires, p. 461–467.

Cod roe: component fatty acids as determined by gas-liquid chromatography. By R. G. Ackman and R. D. Burgher, p. 469–476.

Some alternative premises for constructing theoretical reproduction curves. By P. A. Larkin, R. F. Raleigh, and N. J. Wilimovsky, p. 477–484.

Tributary homing of sockeye salmon at Brooks and Karluk Lakes, Alaska. By Wilbur L. Hartman and Robert F. Raleigh, p. 485–504.

The primary production of a British Columbia fjord. By Malvern Gilmartin. p. 505–538.

Polyphosphate treatment of frozen cod. 2. Effect on drip, yield, lipid hydrolysis and protein extractability in twice-frozen Newfoundland summer trap and fall cod. By W. A. MacCallum, H. S. Shieh, Dorothy A. Chalker, W. J. Dyer, and D. R. Idler, p. 539–548.

Incidence of *Ligula intestinalis* in Heming Lake fish. By G. H. Lawler, p. 549–554.

Marine ostracods from the plankton of Indian Arm, British Columbia, including a diminutive subspecies resembling *Conchoecia alata major* Rudjakov. By R. A. McHardy, p. 555–576.

Cooking method and palatability of frozen cod fillets of various qualities. By W. J. Dyer, Doris I. Fraser, Ruth G. MacIntosh, and Margaret Myer, p. 577–589.

Retinomotor cycles and correlated behaviour in the teleost *Astyanax mexicanus* (Fillipi). By Kenneth R. John and Michael Haut, p. 591–595.

Fecundity of the American plaice, *Hippoglossoides platessoides* (Fabr.) from Grand Bank and Newfoundland areas. By T. K. Pitt, p. 597–612.

Net avoidance behaviour of carp and other species of fish. By John R. Hunter and Warren J. Wisby, p. 613–633.

Notes

A convenient technique for obtaining pituitary glands from fish. By H. Tsuyuki, P. J. Schmidt, and M. Smith, p. 635–637.

A vacuum-assisted subsampler for use with small planktonic organisms. By Robert A. McHardy, p. 639–640.

Amino acid composition of bacteria and its possible relation to taxonomy. By Michael Smith, p. 641–642.

Angling license sales from Northwest Territories, Canada, with special reference to Great Slave Lake. By J. J. Keleher, p. 643–645.

Bathythermograph data on aperture cards: a new approach to an old problem. By Charles D. Sauer, p. 647–650.

Further evidence of hardiness of "silver" pike. By G. H. Lawler, p. 651–652.

Utilization of lipids by fish. III. Fatty acid oxidation by various tissues from sockeye salmon (*Oncorhynchus nerka*). By R. E. E. Jonas and E. Bilinski, p. 653–656.

An unusually late-spawning British Columbia chum salmon. By W. Percy Wickett, p. 657.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 659–660.

Issue No. 4 (*published July 31, 1964*)

Abundance and distribution of lobster larvae (*Homarus americanus*) in Northumberland Strait. By D. J. Scarratt, p. 661–680.

Redescription of *Lernaeopoda centroscyllii* Hansen, 1923 (Copepoda: Lernaeopodidae). By Z. Kabata, p. 681–689.

Serologically differentiated subpopulations of the Pacific sardine, *Sardinops caerulea*. By Andrew M. Vrooman, p. 691–701.

Extractives of fish muscle. 4. Seasonal variations of fat, water-solubles, protein, and water in cod (*Gadus morhua* L.) fillets. By N. Dambergs, p. 703–709.

A technique for prolonged blood sampling in free-swimming salmon. By Lynwood S. Smith and Gordon R. Bell, p. 711–717.

Temperatures and thaw-drip associated with electronic thawing of Newfoundland cod. By W. A. MacCallum, p. 719–726.

Vital statistics of *Esox masquinongy* in Nogies Creek, Ontario. II. Population size, natural mortality, and the effect of fishing. By Barry S. Muir, p. 727–746.

Origin of marine fatty acids. I. Analyses of the fatty acids produced by the diatom *Skeletonema costatum*. By R. G. Ackman, P. M. Jangaard, R. J. Hoyle, and H. Brockerhoff, p. 747–756.

Effects of food supply on fecundity in the female guppy, *Lebistes reticulatus* (Peters). By Frank J. Hester, p. 757–764.

Biosynthesis of trimethylammonium compounds in aquatic animals. IV. Precursors of trimethylamine oxide and betaine in marine teleosts. By E. Belinski, p. 765–771.

Histology of reproduction and the estrus cycle in the female fur seal, *Callorhinus ursinus*. By A. M. Craig, p. 773–811.

Use of gamma radiation for the preservation of scallop meat. By H. E. Power, D. I. Fraser, W. Neal, W. J. Dyer, C. H. Castell, H. C. Freeman, and D. R. Idler, p. 813–826.

Gamma irradiation as a means of extending the storage life of haddock fillets. By H. E. Power, D. I. Fraser, W. Neal, W. J. Dyer, and C. H. Castell, p. 827–835.

Notes

Movements of halibut on the Nova Scotian and Grand Banks. By A. C. Kohler, p. 837–840.

Pilchard oil: an analysis for component fatty acids with particular reference to the C_{24} chain length. By R. G. Ackman and J. C. Sipos, p. 841–843.

An air-lift pump for elevating salmon, herring, and other fish of similar size. By S. W. Roach, F. G. Claggett, and J. S. M. Harrison, p. 845–849.

Observations on egg cases of the big skate (*Raja binoculata* Girard) found in Oregon coastal waters. By Charles R. Hitz, p. 851–854.

Rockfish (*Sebastodes brevispinis*) in British Columbia waters. By S. J. Westrheim, p. 855–856.

Apparent onset of rigor mortis in steelhead trout (*Salmo gairdneri*) in the absence of loss of adenosine triphosphate from the ordinary muscle. By N. Tomlinson, S. E. Geiger, and W. W. Kay, p. 857–859.

Stomach contents of blue shark (*Prionace glauca* L.) taken in the Gulf of Alaska. By R. J. LeBrasseur, p. 861–862.

A morphometric description of porbeagle (*Lamna nasus*) from Canadian Atlantic waters. By R. A. McKenzie and S. N. Tibbo, p. 863–864.

A morphometric description of blue shark (*Prionace glauca*) from Canadian Atlantic waters. By R. A. McKenzie and S. N. Tibbo, p. 865–866.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 867–868.

Issue No. 5 *(published November 10, 1964)*

Editor's foreword, p. (i).

W. A. Clemens—An appreciation. By W. S. Hoar, p. 869–872.

A new species of parasitic copepod, *Caligus clemensi* sp. nov. (Caligoida: Caligidae), from pelagic fishes in the coastal waters of British Columbia. By R. R. Parker and L. Margolis. p. 873–889.

Preliminary observations on the vertical distribution of Pacific salmon (genus *Oncorhynchus)* in the Gulf of Alaska. By J. I. Manzer, p. 891–903.

Ocean growth and mortality of pink and chum salmon. By W. E. Ricker, p. 905–931.

A new gunnel, *Pholis clemensi*, from the coast of western North America. By Richard H. Rosenblatt, p. 933–939.

Oceanographic regions and assessment of temperature structure in the seasonal zone of the north Pacific Ocean. By John P. Tully, p. 941–970.

Redescription of the parasitic isopod *Holophryxus alaskensis* Richardson, and a note on its synonymy. By T. H. Butler, p. 971–976.

Problems in zoogeography of the lake trout, *Salvelinus namaycush*. By C. C. Lindsey, p. 977–994.

Salinity preference: an orientation mechanism in salmon migration. By John E. McInerney. p. 995–1018.

Estimation of sea mortality rates for the 1960 brood-year pink salmon of Hook Nose Creek. British Columbia. By Robert R. Parker, p. 1019–1034.

Seasonal variations in the sterol, fat and unsaponifiable components of scallop muscle. By D. R. Idler, T. Tamura, and T. Wainai, p. 1035–1042.

Thermal resistance of pike (*Esox lucius* L.), muskellunge (*E. masquinongy* Mitchill), and their F_1 hybrid. By D. P. Scott, p. 1043–1049.

Preliminary results of studies on growth and mortality of Pacific cod (*Gadus macrocephalus*) in Hecate Strait, British Columbia. By K. S. Ketchen, p. 1051–1067.

Some characteristics of Nitinat Lake, an inlet on Vancouver Island, British Columbia. By T. G. Northcote, Mildred S. Wilson, and D. R. Hurn, p. 1069–1081.

Club cells and granular cells in the skin of lamprey. By Wolfgang Pfeiffer and T. F. Pletcher. p. 1083–1088.

Reflectivity of the chorioidal tapeta of selachians. By J. A. C. Nicol, p. 1089–1100.

Growth rate of central British Columbia pink salmon (*Oncorhynchus gorbuscha*). By R. J. LeBrasseur and R. R. Parker, p. 1101–1128.

Distribution and synonymy in the Pacific Ocean, and variation, of the Greenland halibut. *Reinhardtius hippoglossoides* (Walbaum). By Carl L. Hubbs and Norman J. Wilimovsky. p. 1129–1154.

Distribution of introduced marine Mollusca in British Columbia waters. By D. B. Quayle. p. 1155–1181.

The respiratory metabolism and swimming performance of young sockeye salmon. By J. R. Brett, p. 1183–1226.

Ocean migrations of Pacific salmon. By Ferris Neave, p. 1227–1244.

A model for simulation of the population biology of Pacific salmon. By P. A. Larkin and A. S. Hourston, p. 1245–1265.

A key to five species of Pacific salmon (genus *Oncorhynchus*) based on scale characters. By H. T. Bilton, D. W. Jenkinson, and M. P. Shepard, p. 1267–1288.

Dispersion of kraft-mill effluent from a submarine diffuser in Stuart Channel. British Columbia. By Michael Waldichuk. p. 1289–1316.

Notes

A quantitative estimate of the number of Pacific herring in a spawning population. By D. N. Outram and F. H. C. Taylor, p. 1317–1320.

Occurrence and distribution of sea water in Sakinaw Lake, British Columbia. By T. G. Northcote and W. E. Johnson, p. 1321–1324.

Successful introduction of *Mysis relicta* Lovén into Kootenay Lake, British Columbia. By R. A. H. Sparrow, P. A. Larkin, and R. A. Rutherglen, p. 1325–1327.

Further information on spawning stock size and resultant production for Skeena sockeye. By M. P. Shepard, F. C. Withler, J. McDonald, and K. V. Aro, p. 1329–1331.

Contribution to the marine life history of the eulachon *Thaleichthys pacificus*. By W. E. Barraclough, p. 1333–1337.

Distinguishing characters for the sculpins *Cottus bairdii* and *C. cognatus* in eastern Canada. By D. E. McAllister, p. 1339–1342.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 1343–1344.

Issue No. 6 (*published January 29, 1965*)

Rancidity in lean fish muscle. I. A proposed accelerated copper-catalyzed method for evaluating the tendency of fish muscle to become rancid. By Jill MacLean and C. H. Castell, p. 1345–1359.

Rancidity in lean fish muscle. II. Anatomical and seasonal variations. By C. H. Castell and Jill MacLean, p. 1361–1369.

Rancidity in lean fish muscle. III. The inhibiting effect of bacterial activity. By C. H. Castell and Jill MacLean, p. 1371–1377.

Fatty acid distribution in lipids of marine plankton. By H. Brockerhoff, M. Yurkowski, R. J. Hoyle, and R. G. Ackman, p. 1379–1384.

Redd superimposition and egg capacity of pink salmon spawning beds. By William J. McNeill, p. 1385–1396.

Polyphosphate treatment of frozen cod. 3. Taste panel evaluation, chemical assessment and thaw-drip in once-frozen Newfoundland trap-caught cod. By W. A. MacCallum, Dorothy A. Chalker, J. T. Lauder, P. H. Odense, and D. R. Idler, p. 1397–1402.

Growth, reproduction, and distribution of pandalid shrimps in British Columbia. By T. H. Butler, p. 1403–1452.

Illumination, vision, and schooling of *Astyanax mexicanus* (Fillipi). By Kenneth R. John, p. 1453–1473.

Dissolved calcium carbonate in the Labrador Sea. By W. G. MacIntyre and R. F. Platford, p. 1475–1480.

The volatile sulphur compounds of oysters. By A. P. Ronald and W. A. B. Thomson, p. 1481–1487.

Characteristics and nutritional value of various fish protein concentrates. By H. E. Power, p. 1489–1504.

Ascidians of the Canadian arctic waters. By Winona Bethune Trason, p. 1505–1517.

Notes

Sterol metabolism in the oyster. By T. Tamura, B. Truscott, and D. R. Idler, p. 1519–1522.

Quest for the true breeding area of the American eel (*Anguilla rostrata* LeSueur). By Vadim D. Vladykov, p. 1523–1530.

Demersal quality of fertilized eggs of rock sole (*Lepidopsetta bilineata* Ayres). By C. R. Forrester, p. 1531–1532.

Rate of development of eggs of rock sole (*Lepidopsetta bilineata* Ayres). By C. R. Forrester, p. 1533–1534.

On passive features in the osmoregulatory adaptation of anadromous salmonids to sea water. By Arthur Hillier Houston, p. 1535–1538.

Effects of MS 222 on glycogen and lactate levels in rainbow trout (*Salmo gairdneri*). By Edgar C. Black and Anne R. Connor, p. 1539–1542.

The application of gas chromatography to the identification of the sterols of scallop. By T. Wainai, T. Tamura, B. Truscott, and D. R. Idler, p. 1543–1546.

A northern pike, *Esox lucius*, with an accessory fin. By G. H. Lawler, p. 1547.

Lobster (*Homarus americanus*) tolerance for tris buffer, sodium fluoride, and sea water extracts of various woods. By James E. Stewart and John W. Cornick, p. 1549–1551.

Corrections for recent publications of the Fisheries Research Board of Canada, p. 1553–1554.

Recent articles on investigations of the Fisheries Research Board of Canada published in other periodicals, p. 1555–1556.

Index to Volume 21, p. 1557–1569.

(A continuing series)

3. BULLETINS

(a) BULLETINS OF THE BIOLOGICAL BOARD OF CANADA

Abbreviation: B

1. Histories of new food fishes. I. The Canadian plaice. By A.G. Huntsman, 32 p., 1918.
2. Histories of new food fishes. II. The lumpfish. By Philip Cox, 28 p., 1920.
3. Histories of new food fishes. III. The angler. By C.J. Connolly, 17 p., 1920.
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    (Édition française) Procédés relatifs à la manutention du poisson. II. Enseignements concernant le saumurage et le paquage du maquereau.
20. The processing and handling of frozen fish, as exemplified by ice fillets. By A.G. Huntsman, 58 p., 1931.
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27. Pacific salmon migration. The tagging of the spring salmon on the east coast of Vancouver Island in 1927 and 1928 with notes on incidental tagging of other fish. By W.A. Clemens, 10 p., 1932.

28. List of publications in connection with the work of the Biological Board of Canada, 1922–1930. By M. S. Rigby, 22 p., 1932.

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36. The pilchard fishery of British Columbia. By John Lawson Hart, 27 p., 1933.

37. The industrial chemistry of fish oils with particular reference to those of British Columbia. By H.N. Brocklesby and O.F. Denstedt, 150 p., 1933. (*See also* Bulletins 59 and 89.)

38. Catch statistics of the British Columbia pilchard. By John Lawson Hart, 12 p., 1933.

39. The extent of the pollution caused by pilchard reduction plants in British Columbia. By John Lawson Hart, H. Borden Marshall, and Desmond Beall, 11 p., 1933.

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41. Pacific salmon migration: the tagging of the spring salmon in British Columbia in 1929 and 1930. By Andrew L. Pritchard, 31 p., 1934.

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54. The ling cod, *Ophiodon elongatus* Girard. By G. V. Wilby, 24 p., 1937.

55. The American merganser in British Columbia and its relation to the fish population. By J.A. Munro and W. A. Clemens, 50 p., 1937.

(b) BULLETINS OF THE FISHERIES RESEARCH BOARD OF CANADA

Abbreviation: B

56. A biological survey of Okanagan Lake, British Columbia. By W. A. Clemens, D. S. Rawson, and J. L. McHugh, 70 p., 1939.

57. Salmon for angling in the Margaree River. By A.G. Huntsman, 75 p., 1939.

58. Bird control to increase the Margaree River salmon. By H.C. White, 30 p., 1939.

59. The chemistry and technology of marine animal oils with particular reference to those of Canada. [Various authors; edited by H.N. Brocklesby.] 442 p., 1941.
(*See* listing of revised edition as Bulletin No. 89.)

60. Oyster farming in Eastern Canada. By A.W.H. Needler, 83 p., 1941.

61. Canadian Atlantic offshore cod fishery east of Halifax. By R.A. McKenzie, 13 p., 1942.

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67. Catch statistics of the British Columbia herring fishery to 1943–1944. By A.L. Tester, 47 p., 1945.

68. Fishes of the Pacific Coast of Canada. By W.A. Clemens and G.V. Wilby, 368 p., 1946.
68R. (Second edition, revised, 443 p., 1961.)

69. The haddock fishery of grounds fished by Canadians. By R.A. McKenzie, 30 p., 1946.

70. The smelt fishery of northeastern New Brunswick. By R.A. McKenzie, 20 p., 1946.

71. The Canadian Atlantic halibut fishery. By R.A. McKenzie, 29 p., 1946.

72. Northwest Canadian fisheries surveys in 1944–45. [Various authors], 94 p., 1947.

73. Marine young fish from the Canadian eastern Arctic. By M.J. Dunbar, 11 p., 1947.

74. Migration of pink salmon in southern British Columbia and Washington in 1945. By Allan C. DeLacy and Ferris Neave, 11 p., 1947.

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86. Moricetown Falls as a hazard to salmon migration. By D.J. Milne, 16 p., 1950.

87. List of publications of the Fisheries Research Board of Canada (formerly the Biological Board of Canada), 1901–1949. 96 p., 1950.

88. Eastern Arctic waters. By M.J. Dunbar, 131 p., 1951.

89. Marine oils, with particular reference to those of Canada. Edited by B.E. Bailey: revised from Bulletin No. 59, with the editorial assistance of N.M. Carter and L.A. Swain, 413 p., 1952.

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(Édition française) La détérioration du poisson frais et ses causes.

101. Effects of a rock slide on Babine River salmon. By H. Godfrey, W.R. Hourston, J.W. Stokes, and F.C. Withler, ix+100 p., 1954.

102. Survey of bar clam resources of the Maritime Provinces. By J. C. Medcof and J. S. McPhail, vi+6 p., 1955.

103. Fish handling and hold construction in Canadian North Atlantic trawlers. By W.A. MacCallum, vii+61 p., 1955.
(Édition française) La manipulation du poisson et la construction des cales dans les chalutiers de l'Atlantique-Nord canadien. vii+66 p., 1960.

104. A new mid-water trawl for herring. By W. E. Barraclough and W. W. Johnson, v+25 p., 1956.
(Édition française) Nouveau chalut pélagique pour le hareng. v+26 p., 1964.

105. Atlantic cod tagging off the southern Canadian mainland. By R. A. McKenzie, viii+93 p., 1956.

106. Babine River salmon after removal of the rock slide. By H. Godfrey, W. R. Hourston, and F. C. Withler, vii+41 p., 1956.

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*The cover and title page erroneously show this date as 1949.

107. The first ten years of commercial fishing on Great Slave Lake. By W.A. Kennedy, vii+58 p., 1956.

108. Danish-seining explorations in Newfoundland and Cape Breton areas. By T.N. Stewart. vii+26 p., 1956.

109. The Bonavista longlining experiment, 1950–53. By Wilfred Templeman and A. M. Fleming, vii+55 p., 1956.

110. Index and list of titles, publications of the Fisheries Research Board of Canada, 1901–1954. Prepared by Yvonne Bishop, Neal M. Carter, Dorothy Gailus, W. E. Ricker, and J. Murray Speirs, xii+209 p., 1957.

111. Report of the Atlantic Herring Investigation Committee. By A. H. Leim, S. N. Tibbo, L. R. Day, L. Lauzier, R. W. Trites, H. B. Hachey, and W. B. Bailey, viii+317 p., 1957.

112. The processing of dried salted fish. By S. A. Beatty and H. Fougère, vii+54 p., 1957. (Édition française) La préparation du poisson salé séché. vii+57 p., 1958.

113. Recent British Columbia spring and coho salmon tagging experiments, and a comparison with those conducted from 1925 to 1930. By D. J. Milne, vii+56 p., 1957.

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119. Handbook of computations for biological statistics of fish populations. By W.E. Ricker, 300 p., 1958.

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125. A manual of sea water analysis. (With special reference to the more common micronutrients and to particulate organic material). By J.D.H. Strickland and T.R. Parsons, vi+185 p., 1960.

125R. (Second edition, revised, vii+203 p., 1965.)

126. Storage and transport of fish in refrigerated sea water. By S.W. Roach, J.S.M. Harrison, and H.L.A. Tarr, with appendices by W.A. MacCallum, M.S. Chan. and A.W. Lantz, ix+61 p., 1961.

(Édition française) Entreposage et transport du poisson en eau de mer réfrigérée. ix+71 p., 1963.

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(Édition française) Répartitions des requins dans l'Atlantique canadien (et plus particulièrement dans les eaux de Terre-Neuve). 83 p., 1966.

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155. Fishes of the Atlantic Coast of Canada. By A.H. Leim and W.B. Scott, 485 p., 1966.

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4. CANADIAN FAUNA SERIES

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Abbreviation: AF

3. *COELENTERATA.*
    - 3a. Hydroida. By C. McLean Fraser, 46 p., 1921.
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    - 9b. Polychaeta. By A.L. Treadwell, 69 p., 1948.
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(b) CANADIAN PACIFIC FAUNA

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    - 1e. Mastigophora. By G.H. Wailes, 45 p., 1939.
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9. *ANNELIDA.*
    - 9b. (1). Polychaeta Errantia. By E. and C. Berkeley, 100 p., 1948.
    - 9b. (2). Polychaeta Sedentaria. By E. and C. Berkeley, 139 p., 1952.
10. *ARTHROPODA.*
    - 10e. Cirripedia. By Ira E. Cornwall, 49 p., 1955.

(This series is discontinued)

5. PROGRESS REPORTS

(a) PROGRESS REPORTS OF FRB ATLANTIC COAST STATIONS

Abbreviation: PRA

Issue No. 1 (*January 1931*)

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Preserving scallops. By A.G. Huntsman, p. 5.
Canning brine-frozen mackerel. By A.G. Huntsman, p. 6.
Prevention of drying in cold storage. By A.H. Leim, p. 7–8.
Preparation of cod liver oil by freezing. By A.H. Leim, p. 9.
Three haddock populations in North American waters. By A.W.H. Needler, p. 10–11.
Metal in water kills fishes. By A.G. Huntsman, p. 12.
Fillet skinner. By A.G. Huntsman, p. 13–14.
Fish hatching investigations. By A.G. Huntsman, p. 15–16.

Issue No. 2 (*April 1931*)

Effect of haddock flesh and skin on gastric juice. By B.P. Babkin, p. 3.
Brine freezer, using ice and salt. By A.G. Huntsman, p. 4–6.
Cold storage changes in frozen fish. By A.H. Leim, p. 7–8.
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Periodical scarcity in salmon. By A.G. Huntsman, p. 16–17.
Big catch of Miramichi salmon every three years. By A.G. Huntsman, p. 18–19.
Brook trout and temperature. By R.H. M'Gonigle, p. 20–21.

Issue No. 3 (*March 1932*)

The preparation of fish meal from oily fish. By H. Ritchie Chipman, p. 3–4.
The moon and when to eat mussels. By Helen I. Battle, p. 5–6.
Fertilizing water with herring meal. By M.W. Smith, p. 7–9.
The soft-shelled clam, a Fundy fishery resource. By C.L. Newcombe, p. 10–12.
Bait preservation. By A.G. Huntsman, p. 13–14.

Issue No. 4 (*July 1932*)

Recent short courses at the Fisheries Experimental Station. By A.H. Leim, p. 3–4.
The reddening of salt fish. By N.E. Gibbons, p. 5–6.
The smoking of fillets and haddies. By A.H. Leim and A.S. McFarlane, p. 6–8.
Scallops: A Bay of Fundy resource. By J.A. Stevenson, p. 8–10.
Water temperature and the haddock fishery of the Fundy area. By R.A. McKenzie, p. 10–13.
Oxygen in water affected by fertilizing. By M.W. Smith, p. 14–15.

Issue No. 5 (*October 1932*)

American Atlantic oysters change their sex. By Alfreda Berkeley Needler, p. 3–4.
The use of mackerel gibs for lobster bait. By A.F. Chaisson, p. 5–7.

Mud bottoms hardened with sand for oyster farming. By A.W.H. Needler, p. 7–8.
The canning of Nova Scotian tuna. By Ernest Hess, p. 9–10.
Successful shipment of frozen fish. By A.H. Leim, p. 10–11.
Disease in eel grass. By A.G. Huntsman, p. 11–14.
Fish meal in relation to Maritime farming. By S.A. Beatty, p. 14–16.

Issue No. 6 (*January 1933*)

Ice for fishing vessels. By Robert H. Bedford, p. 3–5.
Female lobsters handicapped in growth by spawning. By W. Templeman, p. 5–6.
St. John November salmon—the earliest run known. By A.G. Huntsman, p. 7–10.
The shipment of live lobsters. By A.F. Chaisson, p. 10–12.
Discoloration of halibut. By Ernest Hess, p. 12–13.
The reddening of salt mackerel. By S.A. Beatty, p. 14–15.

Issue No. 7 (*April 1933*)

Heat and cold make herring seasons in Passamaquoddy. By A.G. Huntsman, p. 3–6.
Salmon fry in still water. By H.C. White, p. 6–8.
Floats for the collection of oyster spat. By A.W.H. Needler, p. 8–10.
High temperature stops haddock fishing. By V.D. Vladykov, p. 10–11.
Brook trout survive torn gills. By H.C. White, p. 12–13.
Courses of instruction. By A.H. Leim, p. 13–14.
Artificial horn from fish flesh. By W.W. Johnston, p. 14–16.

Issue No. 8 (*July 1933*)

Failures in oyster spat production at Shediac. By A.W.H. Needler, p. 3–4.
Mackerel invade the herring nursery. By A.G. Huntsman, p. 4–6.
Passamaquoddy sardine fishing makes Tobique salmon angling. By A.G. Huntsman, p. 6–9.
Lobster a powerful stimulus for the stomach's juices. By A. Alley, p. 10–11.

Issue No. 9 (*October 1933*)

The *why* and *how* of vacuum in canned fish. By Ernest Hess, p. 3–4.
Banding on smoked fillets. By A.S. McFarlane, p. 4.
Organisms causing reddening of salt fish. By N.E. Gibbons, p. 5.
Minerals and fish meal in animal feeding. By S.A. Beatty, p. 6–7.
Storage temperature of canned fish. By Ernest Hess, p. 7–8.
Artificial horn from fish muscle. By W.W. Johnston, p. 8.

Issue No. 10 (*January 1934*)

Frozen oysters survive unless jarred. By M.H. Friedman, p. 3–4.
The cod changes colour. By R.A. McKenzie, p. 4–5.
To stop spoilage keep fish very cold. By Ernest Hess, p. 6.
Hydrochloric acid preserves fish. By N.E. Gibbons, p. 7.
Maritime white fish meals highly digestible. By S.A. Beatty, p. 8.
Constructing and operating a small bait storage. By A.S. McFarlane, p. 8–9.
Substances in juices explain digestive advantages of fish. By James Campbell, p. 9–10

Issue No. 11 (*April 1934*)

The trend of water temperatures on our Atlantic seaboard. By H.B. Hachey, p. 3–5.

North Atlantic cyclones and coastal waters. By H.B. Hachey, p. 6–9.

The growth-rate of Canadian scallops. By J.A. Stevenson, p. 10–11.

Hake fishery concentrated at mouth of Bay of Fundy. By Helen I. Battle, p. 12–14.

Temperature and "clearing" time for the sardine. By Helen I. Battle, p. 14–16.

Issue No. 12 (*October 1934*)

Cod and water temperature. By R.A. McKenzie, p. 3–6.

Canning scallops. By Ernest Hess, p. 7.

The smoke curing of fresh fillets: Part 1—The quick drying of fillets to aid in the production of a satisfactory appearance. By D. LeB. Cooper and E.P. Linton, p. 7–9.

The smoke curing of fresh fillets: Part 2—A ready method for smoking fillets in two to three hours. By E.P. Linton and D. LeB. Cooper, p. 10–12.

Issue No. 13 (*December 1934*)

The smoke curing of fresh fillets: Part 3—A method of measuring low air and smoke velocities. By D. LeB. Cooper and E.P. Linton, p. 3.

The smoke curing of fresh fillets: Part 4—Commercial size funnels for pre-drying. By D. LeB. Cooper and E.P. Linton, p. 5.

The grading of lobster canneries. By Ernest Hess, p. 5–7.

Compartment ice and salt freezer. By A.S. McFarlane, p. 7–9.

Estimated cost of freezing herring using ice and salt. By A.S. McFarlane, p. 9–10.

Cod spawning in the Bay of Fundy and about southwestern Nova Scotia. By R.A. McKenzie, p. 10–14.

Issue No. 14 (*June 1935*)

Haddock races along the North American coast. By V.D. Vladykov, p. 3–7.

Canning mackerel fillets. By Ernest Hess, p. 8–12.

The control of reddening of salted fish. By N.E. Gibbons, p. 13–14.

The handling of shucked scallops. By S.A. Beatty, p. 14–16.

Issue No. 15 (*July 1935*)

Cod and haddock tagging. By A.H. Leim, p. 3.

An investigation into the main factors contributing to the spoilage of fresh fish. By S.A. Beatty and N.E. Gibbons, p. 4–9.

Do haddock feed during the spawning period? By V.D. Vladykov and R.E.S. Homans, p. 10–11.

Scientific protection and aid to the canner. By D. LeB. Cooper, p. 12–14.

Courses given at the Atlantic Fisheries Experimental Station in the winter of 1935. By H. Ritchie Chipman, p. 14–16.

Issue No. 16 (*October 1935*)

The waters of the Scotian Shelf. By H.B. Hachey, p. 3–6.

Codfish in captivity. By R.A. McKenzie, p. 7–10.

The effects of temperature and salinity on the early development of the oyster. By A. Elizabeth Clark, p. 10.

The manufacture of fish glue. By W.W. Johnston, p. 11–13.

Index covering all Progress Reports issued to date, p. 14–16.

Issue No. 17 (*May 1936*)

The 1936 short course for fishermen. By H. Ritchie Chipman, p. 3–4.

Geographical distribution of fishermen attending short courses. By H. Ritchie Chipman, p. 5.

Sex ratios in oysters of known age. By (Mrs.) A.B. Needler, p. 6–7.

Temperature as a factor in starfish distribution. By G.F.M. Smith, p. 7.

Copper sulphate and the destruction of undesirable fish in lakes. By M.W. Smith, p. 8–9.

Rearing speckled trout in fertilized water. By M.W. Smith, p. 10–11.

Cod and water temperatures. By R.A. McKenzie, p. 11–12.

Issue No. 18 (*November 1936*)

The preparation of "marinated herring." By D.W. Watson and E. Hess, p. 3–6.

Preservation by salting. By D.B. Finn, p. 7–11.

The preparation of leather bates from fish. By W.W. Johnston, p. 11–15.

Issue No. 19 (*May 1937*)

Jellied swordfish. By R.H. M'Gonigle and A.H. Leim, p. 3–5.

A new protection for wood against shipworms. By A.W.H. Needler, p. 6–7.

A satisfactory small smoke-house. By D. LeB. Cooper, p. 7–9.

Chitinovorous bacteria on live lobsters. By Ernest Hess, p. 10–11.

Yield in canning "chicken haddies." By Ernest Hess, p. 11–14.

Issue No. 20 (*August 1937*)

The measurement of the spoilage of fresh fish. By S.A. Beatty, p. 3–5.

Fish production in three Nova Scotia lakes. By M.W. Smith, p. 6–7.

Fish drying. By D. LeB. Cooper, p. 8–10.

A new way to tell when to flake and when to pile salt fish. By D. LeB. Cooper, p. 10.

Is the Gulf Stream coming closer? By H.B. Hachey, p. 11–14.

Index covering Atlantic Progress Reports 17 to 20, p. 15.

Issue No. 21 (*December 1937*)

Canning lobsters "wet pack" style. («Empaquetage humide» pour la mise en conserve du homard.) By E. Hess, p. 4–5.

Extracteur d'huile de foie de morue pratique et de construction facile. (Practical and easy-to-build cod liver oil extractor.) By Arthur Labrie and Henri Fougère, p. 6–8.

Some factors affecting the activity of leather bates prepared from fish. (Quelques facteurs affectant l'activité d'une enzyme (confit) préparée à partir des chairs de poisson.) By W.W. Johnston, p. 9–12.

Cours de pêche donné à Grande-Rivière, P.Q. au mois de mai, 1937. (Courses given at Grand Rivière. By Arthur Labrie, p. 12–13.

Highest water temperatures on record. (Record de haute température.) By H.B. Hachey, p. 14–15.

Comment améliorer les barques affectées à la pêche de bancs en Gaspésie. (How to improve offshore fishing boats in Gaspé.) By A. Nadeau, p. 16–18.

Issue No. 22 (*May 1938*)

Canadian Atlantic "Bank" cod migrations. (Migration de la «morue de banc» dans les eaux canadiennes de l'Atlantique.) By R.A. McKenzie, p. 3–6.

The discoloration of halibut. (La coloration jaune du flétan.) By D.B. Finn, p. 7.

Cheap protection for wood against shipworms. (Protection peu dispendieuse contre le taret.) By A.W.H. Needler, p. 8–9.

The size of lobsters caught in the southern part of the Gulf of St. Lawrence. (Taille des homards capturés dans la partie sud du Golfe St.-Laurent.) By G.F.M. Smith, p. 9–10.

Report on course for fishermen, 1938. (Rapport du cours aux pêcheurs, 1938.) By D.B. Finn, p. 11.

Cod take smaller bites in ice-cold water. (La morue prend les bouchées plus petites quand l'eau est froide.) By R.A. McKenzie, p. 12–14.

Issue No. 23 (*November 1938*)

The removal of suspended matter from the effluent of fish meal plants. (La récupération des matières en suspension des eaux résiduaires des fabriques de farine de poisson.) By W.W. Johnston, p. 3–4.

Cours de pêche de 1938. (1938 Fisheries course.) By A. Labrie, p. 5–6.

Fish spoilage. (La décomposition du poisson.) By V.K. Collins, p. 6–8.

Shrinkage in clam canning. (Diminution en poids dans la mise en conserve des clanques (clams).) By Ernest Hess, p. 8–9.

"Putty fish." (Poisson fermenté.) By D.B. Finn, p. 10–12.

Avis aux pêcheurs et marchands de poisson. (Notice for fishermen and fish dealers.) By A. Labrie, p. 13.

"Jellyfish" forecast the hurricane of September 21st. (Les méduses prédisent l'ouragan du 21 septembre.) By H.B. Hachey, p. 13–15.

Notes, p. 15.

Issue No. 24 (*May 1939*)

La préservation du filet frais. (The preservation of fresh fillets.) By A. Nadeau, p. 3–5.

The cod fishery and the water temperature on the Scotian Shelf. (Les captures de morue en rapport avec la température de l'eau au large de la Nouvelle-Écosse.) By R.A. McKenzie and H.B. Hachey, p. 6–8.

Analyses bactériologiques de la neige et de la glace à l'extérieur et dans les entrepôts. (Bacteriological analysis of snow and ice in natural conditions and in storage.) By A. Nadeau, p. 9–12.

Increased haddock landings in southwestern Nova Scotia, 1938. (Augmentation dans les captures d'aiglefin au sud-ouest de la Nouvelle-Écosse en 1938.) By R.A. McKenzie and R.E.S. Homans, p. 12–15.

The free swimming stages of the lobster. (Le homard dans ses stades de nageur.) By G.F.M. Smith, p. 16–17.

Conditions d'humidité et de température à Grande-Rivière durant la saison de pêche 1938. (Humidity and temperature readings during fishing season 1938.) By Arthur Labrie, p. 17–18.

Report on course for fishermen, 1939–40. (Rapport sur le cours aux pêcheurs, 1939–40.) By D.B. Finn, p. 19–20.

Issue No. 25 (*December 1939*)

A change in the spring–summer cod fishery of eastern Cape Breton, N.S. (La morue du printemps et de l'été à l'est du Cap-Breton, N.-É.) By R.A. McKenzie, p. 3–5.

Canned "chicken haddies." (Mise en conserve de l'aiglefin désossé (chicken haddies).) By E. Hess, p. 5–7.

Le fumage de l'anguille et sa mise en conserve. (Smoked eel; Canned eel.) By H.H. Fougère, p. 7–10.

The effect of a size limit on commercial lobster catches. (Les effets de la limite de longueur du homard sur la pêche commerciale.) By G.F.M. Smith, p. 10–12.

The eastern Canadian Maritime flat-fishes. (Les poissons plats de l'est du Canada, p. 12, Issue No. 26.) By R.A. McKenzie, p. 12–16.

Issue No. 26 (*February 1940*)

La préservation de filet frais. (The influence of *p*H on the preservation of fish.) By A. Nadeau, p. 3–5.

Fish production in Trefry's Lake, Nova Scotia. (Limnologie du lac Tréfry (N.-É).) By M.W. Smith, p. 6–8.

Cod migrations in the Halifax region. (Migration de la morue dans le région d'Halifax.) By R.A. McKenzie, p. 8–12.

Issue No. 27 (*April 1940*)

Instructions for sterilizing fish curing plants, salt fish stores, fish makers' sheds, salt bins, boat holds, etc., to destroy red salt bacteria. (Instructions relatives à la désinfection des ateliers de pêche, entrepôts de poisson salé, hangars, bacs à sel, baux des embarcations, etc., en vue de détruire le microbe du «rouge».) By Ernest Hess, p. 3–7.

La mise en conserve des foies de morue. (Canned cod livers.) By A. Labrie, p. 7–8.

Helping oyster growers to collect spat by predicting sets. (Aide apportée aux ostréiculteurs dans la récolte du naissain par la prédiction de sa fixation.) By A.W.H. Needler, p. 8–10.

The measurement of fish spoilage. (Determination du degré de décomposition du poisson.) By S.A. Beatty, p. 10–12.

Quicklime for destroying starfish on oyster grounds. (La chaux vive comme agent destructeur des étoiles de mer sur les bancs d'huîtres.) By A.W.H. Needler, p. 13–15.

Rapport du cours de pêche, donné à Grande-Rivière, Gaspé, en octobre, 1939. (Short courses to fishermen.) By A. Labrie, p. 16–17.

Correction re labelling canned "Chicken Haddies." (Correction relative à l'étiquetage de conserves d'aiglefin désossé.) By E. Hess, p. 17.

Issue No. 28 (*December 1940*)

Starfish growth. (Croissance des étoiles de mer.) By G.F.M. Smith, p. 3–4.

Movements of starfish. (Le déplacement des étoiles de mer.) By G.F.M. Smith, p. 4–5.

The removal of starfish from oyster beds by mops. (Enlèvement des ètoiles de mer sur les bancs d'huîtres au moyen de tampons de coton.) By G.F.M. Smith, p. 5–6.

Intensity of the lobster fishery in the Northumberland Straits fall season. (La prise du homard dans le détroit de Northumberland pendant la saison d'automne.) By G.F.M. Smith, p. 7–8.

L'anguille à la galantine. (Jellied canned eel.) By H. Fougère, p. 8–9.

The spring haddock "run," Jordan Harbour, N.S. (Le banc d'aiglefin dans le havre de Jordan, N.-É., au printemps.) By R.A. McKenzie, p. 9–14.

Gulf of St. Lawrence, Bradelle Bank, cod tagging. (Étiquetage de la morue sur le banc de Bradelle dans le Golfe St-Laurent.) By R.A. McKenzie, p. 14–17.

"Dun" salt fish. (Moisissure («dun») du poisson salé et séché.) By E. Hess, p. 17–20.

Issue No. 29 (*April 1941*)

Winter flooding of the Scotian Shelf. (L'inondation hivernale du «Tablier écossais») By H.B. Hachey, p. 3–5.

Recaptures from cod tagging at Cheticamp, C.B., 1937. (Retours de l'étiquetage des morues à Cheticamp, 1937.) By R.A. McKenzie, p. 6–11.

The amount of oil recovered by pressing the cooked liver residue. (Récupération par pression de l'huile du résidue de foie cuit.) By W.W. Johnston, p. 11–12.

Extraction de l'huile de foie de morue nouveau procédé. (A new cod liver oil extractor.) By A. Nadeau, p. 12–14.

Development of oyster stocks resistant to an epidemic disease. (Production d'une souche d'huîtres qui résistent à une maladie contagieuse.) By A.W.H. Needler. p. 15–17.

Vitamin A in swordfish (*Xiphius gladius*) and tuna (*Thunnus thynnus*). (Vitamine A chez l'espadon (*Xiphius gladius*) et le thon (*Thunnus thynnus*).) By W.W. Johnston, p. 17–19.

The sun rotting of cod liver oil. (Décomposition au soleil de l'huile de foie de morue.) By W.W. Johnston, p. 19–20.

Short courses for cannery foremen. By Ernest Hess, p. 20–21.

Issue No. 30 (*November 1941*)

The growth of quahaugs in Canada. (La croissance des praires au Canada.) By C.J. Kerswill, p. 3–5.

Biologie du homard de la région de Grande-Rivière, Baie des Chaleurs. (Biology of the lobsters of the Grand River, Bay Chaleur, Region.) By J.-L. Tremblay, L.-P. Dugal, and G. Roy, p. 6–7.

The intensity of the fishery and the size of lobsters caught. (L'intensité de la pêche et la taille du homard capturé.) By G.F.M. Smith, p. 7–8.

Salting by weight. (Le salage par poids.) By W.J. Dyer, p. 8–9.

A test to estimate the keeping quality of fresh fish. (Essai pour déterminer la durée probable de conservation du poisson frais.) By E. Hess, p. 10–12.

Issue No. 31 (*February 1942*)

"Putty" fish. (Poisson gélatineux («putty-fish»).) By S.A. Beatty, p. 3–6.

Fumoir Modèle C. (Smoke house Model C.) By Henri Fougère, p. 6–8.

"Iceland pack" canned fish. (Poisson en conserve, méthode Islandaise.) By E. Hess, p. 8–11.

Issue No. 32 (*July 1942*)

The smallmouth black bass in the Maritime Provinces. (La perche noire à petite bouche dans les provinces maritimes.) By M.W. Smith, p. 3–5.

L'entreposage des foies de morues. (Storage of cod livers.) By Louis-Charles Dugal, p. 5–6:

The salting of codfish. I. (Le salage de la morue. I.) By W.J. Dyer, p. 6–8.

Survey of the shore mollusc resources of the Northumberland Strait coast of Nova Scotia. By R.A. Ingalls and A.W.H. Needler, p. 8–10.

A rapid method for the determination of the fat content of fish tissues. (Méthode rapide de dosage des gras dans les chairs de poisson.) By W.W. Johnston, p. 11–12.

Issue No. 33 (*November 1942*)

The salting of codfish. II. The influence of skin surface, temperature, condition of fish, and brine concentration. (Le salage de la morue. II.) By W.J. Dyer, p. 3–6.

La pêche de la morue et la temperature d'eau de mer. (Cod fishing in relation to water temperature.) By Jean-Louis Tremblay, p. 7–9.

Reminder to canners. By E. Hess, p. 10–11.

Notes, p. 11.

Issue No. 34 (*November 1943*)

J.J. Cowie (tribute to the late). By O.F. MacKenzie, p. 3.

John Dybhavn (tribute to the late). By A. Handfield Whitman, p. 3.

A colour test for the measurement of freshness of sea fish by trimethylamine estimation. (Une nouvelle méthode de déterminer la fraîcheur du poisson par le dosage colorimétrique de la triméthylamine.) By W.J. Dyer, p. 4–5.

The 1941–42 smelt catch of north-eastern New Brunswick. (Les prises d'éperlan en 1941–42 dans la région nord-est du Nouveau-Brunswick.) By R.A. McKenzie, p. 5–7.

The effect of box-net mesh on the catch of smelt. (L'effet de la grandeur des mailles des trappes employées à la capture de l'éperlan.) By R.A. McKenzie, p. 7–9.

A tunnel smoke-house for the smoke curing of fish. (Un fumoir type tunnel pour le poisson.) By E.P. Linton and A.L. Wood, p. 10–15.

Le séchage artificiel des filets de morue salée. (The artificial drying of boneless codfish.) By Henri Fougère, p. 15–17.

Seasonal variation in the fatness of "sardine" herring. (La variation saisonnière de la teneur en gras du petit hareng communément appelé sardine.) By A.H. Leim, p. 17–19.

La décoloration de l'huile de foie de morue par neutralisation. (Soap clearing of cod-liver oil.) By Louis-C. Dugal and A.J. Wood, p. 19–22.

The effect of lath spacing and size of fishing ring on the catch of lobster traps. (L'effet de l'espace entre les lattes et de la grandeur de l'anneau de l'ouverture des casiers à homard.) By D.G. Wilder, p. 22–24.

Issue No. 35 (*March 1944*)

Experiments in the production of soft-shelled clams (*Mya*). (Expériences sur la culture des coques (*Mya*).) By A.W.H. Needler and R.A. Ingalls, p. 3–8.

Migrations des morues dans la région de la Baie des Chaleurs. (Cod migrations in the Bay Chaleur area.) By Jean-Louis Tremblay, p. 8–10.

How relaying and transferring at different seasons affects the fatness of oysters. (Comment les déplacements et les déménagement influencent la corpulence des huîtres en différentes saisons.) By J.C. Medcof, p. 11–14.

Atlantic dog fish liver oils. (L'huile de foie de chien de mer sur la côte de l'Atlantique.) By A.J. Wood and W.W. Johnston, p. 14–15.

The movement of speckled trout fingerlings planted in lakes. (Les déplacements des alevins déposés dans les lacs.) By M.W. Smith, p. 16–17.

The growth rate of bar clams. (Le taux de croissance des fausses praires («palourdes de dune»).) By C.J. Kerswill, p. 18–20.

Fish cutting tables. (Tables de tranchage.) By A.J. Wood, p. 20–22.

Stream clearance for spawning smelt. (L'enlèvement des obstructions dans les ruisseaux fréquentés par les éperlans.) By R.A. McKenzie, p. 24–25.

Salt fish dryer. (Le séchoir artificiel pour le poisson salé.) By E.P. Linton and A.L. Wood, p. 26–28.

Issue No. 36 (*September 1946*)

Heat transfer in trawler holds. (La pénétration de la chaleur dans les cales de chalutiers.) By A.F. Dunn, p. 3–6.

The yield of native and planted trout to anglers from Charlotte County lakes, New Brunswick. (Le rendement aux pêcheurs des truites indigènes et des truites de repeuplement artificiel dans les lacs du comté de Charlotte au Nouveau-Brunswick.) By M.W. Smith, p. 6–10.

Efficacité d'un nouveau modèle de table de tranchage. (A study in plant sanitation.) By H. Fougère and A. Nadeau, p. 10–14.

The fish plant water supply. (L'approvisionnement en eau des ateliers de poisson.) By C.H. Castell, p. 14–19.

Keeping quality of smoked fillets. (La conservation de filets fumés.) By E.P. Linton and W.J. Dyer, p. 19–24.

Issue No. 37 (*January 1947*)

The spoilage of gutted cod stored in crushed ice. (La décomposition de morues éviscérées dans la glace concassée.) By W.J. Dyer, F.E. Dyer, and J.M. Snow, p. 3–9.

La valeur nutritive des foies de loup-marin. (The nutritive value of seal livers.) By L.C. Dugal and L. Riou, p. 9–10.

The effect of fishing on lobster populations as determined by tagging experiments. (L'influence des captures sur les populations de homard déterminée par des expériences d'étiquetage.) By D.G. Wilder, p. 10–14.

The oyster drill in Canada. (L’urosalphinx parasite de l’huître au Canada.) By J.R. Adams, p. 14–18.

The artificial drying of salt fish. (Le séchage artificiel du poisson salé.) By A.L. Wood, p. 18–20.

Issue No. 38 (*April 1947*)

Yield of speckled trout to anglers from a Prince Edward Island pond. (Les captures de truites mouchetées dans un étang de l’Île-du-Prince-Édouard.) By M.W. Smith, p. 3–6.

Le séchage artificiel du capelan. (Artificial drying of capelin.) By H. Fougère, p. 6–10.

Spoilage of freshly cut fillets. (La décomposition des filets frais.) By W.J. Dyer and F.E. Dyer, p. 10–15.

Issue No. 39 (*July 1947*)

The control of fillet contamination in fish plants: Part I–A survey of present conditions. (Le contrôle de la contamination du filet dans les ateliers de poisson: 1re partie: Revue des conditions actuelles.) By C.H. Castell, p. 3–8.

Some principles of fish smoking. (Quelques remarques sur le fumage de poisson.) By S.A. Beatty, p. 8–11.

The effect of crowding of smelt eggs on the production of larvae. (L’effet de l’entassement des œufs d’éperlan sur l’éclosion des larves.) By R.A. McKenzie, p. 11–13.

Auxiliary dryer for kipper snacks. (Un séchoir auxiliaire les «kipper snacks».) By A.L. Wood, p. 14–15.

Station expérimentale de pêche de la Gaspésie. (Gaspé Fisheries Experimental Station.) By A. Nadeau, p. 16.

Issue No. 40 (*November 1947*)

Losses through the leaching by water from melting ice of soluble constituents in iced, gutted cod. (Pertes causées par l’eau de fonte de la glace sur les constituants de la morue éviscérée et enneigée.) By W.J. Dyer and F.E. Dyer, p. 3–5.

Aluminum filleting table. (Table de tranchage en aluminium.) By A.L. Wood and H.E. Power, p. 6–7.

The effect of chlorine solutions on the colour and flavour and preservation of fish muscle. (L’effet des solutions de chlore sur la couleur, la saveur et la préservation de la chair de poisson.) By C.H. Castell, p. 7–9.

The use of chlorine disinfectants in fish plants. (L’usage de désinfectant chlore dans les ateliers à poisson.) By C.H. Castell, p. 9–11.

Issue No. 41 (*January 1948*)

Dr. A.T. Cameron (obituary). By O.F. MacKenzie, p. 3.

Palatability changes in stored cod fillets. (Évolution de la saveur des filets de morue au cours de l’entreposage.) By F.E. Dyer and W.J. Dyer, p. 4–10.

The control of fillet contamination in fish plants: Part II. The relationship between the initial contamination and the subsequent rate of spoilage. (Le contrôle de la contamination du filet dans les ateliers de poisson: 2eme partie—Relation entre la contamination initiale et la conservation ultérieure du poisson.) By C.H. Castell, p. 10–14.

The growth of lobsters at Grand Manan, N.B. (La croissance du homard à Grand Manan, N.-B.) By D.G. Wilder, p. 14–16.

Issue No. 42 (*April 1948*)

Modifications in design of the A.F.E.S. Tunnel Type Smokehouse. (Modifications du plan du fumoir genre tunnel de la station expérimentale de pêche de l’Atlantique. Halifax, N.-E.) By A.L. Wood, p. 3–4.

High surface sea-water temperatures in 1947. (Température élevée de l’eau de mer de surface en 1947.) By H.B. Hachey and H.J. McLellan, p. 4–6.

Cholesterol from fish meal. (Le cholestérol à partir de la farine de poisson.) By S.A. Beatty, p. 6–7.

Yield of speckled trout to anglers from certain lakes in New Brunswick and Nova Scotia. (Les captures de truites mouchetées dans quelques lacs du Nouveau-Brunswick et de la Nouvelle-Ecosse.) By M.W. Smith, p. 7–10.

Air transport of fish. (Le transport du poisson par voie des airs.) By S.A. Beatty, p. 10–11.

Issue No. 43 (*July 1948*)

Fertilization of a lake to improve trout angling. (Fertilisation d'un lac pour améliorer la pêche sportive.) By M.W. Smith, p. 3–7.

Cycles of temperature in surface water of the Canadian Atlantic coast. (Variations périodiques de température des eaux de surface sur la côte canadienne de l'Atlantique.) By H.B. Hachey and H.J. McLellan, p. 7–9.

Movement and population of speckled trout in a Prince Edward Island stream. (Déplacement et population de la truite mouchetée dans un ruisseau de l'Île-du-Prince-Édouard.) By M.W. Smith, p. 9–13.

The icing of refrigerator cars. (Le problème des wagons frigorifiques.) By S.A. Beatty, p. 13–14.

Issue No. 44 (*January 1949*)

Bacterial food poisoning and food borne infections in fresh fish and lobsters. (Empoisonnements alimentaires et infections bactériennes par le homard et le poisson frais.) By C.H. Castell, p. 3–5.

Meat yield from Digby scallops of different sizes. (Rendement en chair comestible des pétoncles Digby pour diffèrentes tailles.) By J.C. Medcof, p. 6–8.

Refrigeration temperatures and the keeping time of fresh fish. (Températures de refrigeration et durée du conservation du poisson frais.) By C.H. Castell, p. 8–12.

«Le rouge». ("The red.") By H.P. Dussault, p. 12–15.

Issue No. 45 (*April 1949*)

Dark-meat and the shell disease of scallops. (Les pétoncles malades et la chair comestible.) By J.C. Medcof, p. 3–6.

Effects of sunlight exposure in rearing young oysters. (Les effets de la lumière sur l'élevage des petites huîtres.) By J.C. Medcof, p. 6–11.

Changes in cooling and transportation technique suggested for the marketing of fresh "fresh" fish. (Suggestions de changements à apporter dans la technique de la réfrigération et du transport du poisson frais et de sa présentation sur le marché.) By W.A. MacCallum, p. 11–13.

Yellow stains in salt fish. (Taches jaunes sur le poisson salé.) By W.J. Dyer, p. 14–15.

Issue No. 46 (*September 1949*)

Spoilage rates at 37° and 32°F. (Durée de conservation du poisson à 37° et à 32°F.) By C.H. Castell, p. 3–6.

An investigation of the cooling rates of gutted fish stored in schooners. (Recherches sur la vitesse de refroidissement du poisson à bord de schooners.) By W.A. MacCallum, G.H. Cook, and R.W. Wilson, p. 6–11.

Issue No. 47 (*December 1949*)

Relation of rock formations to trout production. (La production de la truite en fonction du terrain.) By M.W. Smith, p. 3–5.

Méthode rapide pour calculer la perte de poids du poisson pendant le séchage. (Nomograph for drying calculations.) By H. Fougère, p. 5–9.

Clean up and disinfection of salt fish plants and equipment. (Elimination de la bactérie rouge des usines et installations infectées.) By C.H. Castell, p. 10–12.

Issue No. 48 (*January 1950*)

Dr. Hess joins F.A.O. (Le Docteur Hess nommé à la F.A.O.) p. 3–4.

A new method for processing cod livers. (Un nouveau procédé de traitement des foies de morue.) By F.A. Vandenheuvel, p. 4–7.

Why we are still troubled with red discoloration in salted fish. (Le problème du «rouge» est difficile à résoudre, pourquoi?) By C.H. Castell, p. 8–9.

A preliminary report on the cod-worm investigation. (Rapport préliminaire des recherches sur le ver de morue.) By D.M. Scott, p. 10–12.

The preparation of marinated herring. (La préparation du hareng mariné.) By R.E.S. Homans, p. 12–16.

Issue No. 49 (*April 1950*)

A new method of processing cod livers. (Un nouveau procédé de traitement des foies de morue.) By H.E. Power and F.A. Vandenheuvel, p. 3–4.

The value of cod liver residue. (La valeur du résidu des foies de morue.) By A. Guttmann, p. 5.

Conditions d'entreposage du poisson salé pendant le transport. (Conditions of storage during transportation of salt fish.) By R. Legendre, p. 7–14.

Abundance changes in Digby scallops. (Variations dans l'abondance des pétoncles sur les bancs de Digby.) By Lloyd M. Dickie, p. 14–18.

Issue No. 50 (*July 1950*)

Movements of halibut on the Canadian Atlantic coast. (Déplacements du flétan sur la côte canadienne de l'Atlantique.) By W.R. Martin and F.D. McCracken, p. 3–8.

The destruction of red halophilic bacteria in solar salt. (La destruction des bactéries halophylles rouges du sel marin.) By C.H. Castell, p. 9–13.

Storage temperature and the control of red bacteria on fish. (La température d'entreposage et le contrôle des bactéries du rouge du poisson.) By C.H. Castell, p. 13–17.

Burrowing habits and movements of soft-shelled clams. (Les coques, leur déplacement et leur terrier.) By J.C. Medcof, p. 17–22.

Issue No. 51 (*October 1950*)

Facilities for handling fresh fish in retail stores in the city of Ottawa. (Enquête dans les poissonneries d'Ottawa.) By J.F. Richards and D.S. Willoughby, p. 3–6.

Quality of fish in the Ottawa retail stores. (La qualité du poisson frais dans les magasins d'Ottawa.) By J.F. Richards and D.S. Willoughby, p. 7–8.

Méthode d'évaluer la contamination des ateliers à poisson salé par la «brume». (Method for determining contamination of salt fish plants by "dun.") By H.P. Dussault, p. 9–11.

Increasing salmon stocks by control of mergansers and kingfishers. (Augmentation des stocks à saumon par le «contrôle» des oiseaux prédateurs.) By P.F. Elson, p. 12–16.

Unusually warm surface sea-water in 1949. (Température des eaux de surface exceptionnellement élevée en 1949.) By L. Lauzier, p. 17–19.

Issue No. 52 (*January 1952*)

The winter flounder—a clam enemy. (Le carrelet—un ennemi des coques.) By J.C. Medcof and J.S. MacPhail, p. 3–7.

Modification of drags to protect small scallops. (Modification des dragues dans le but de protéger les pétoncles de petite taille.) By J.C. Medcof, p. 9–14.

Salting codfish. I—Some considerations on heavy salted pickle fish. (Quelques considérations sur le poisson fortement salé.) By H. Fougère, p. 15–17.

Salting codfish. II—Gaspé cure. (Salage de la morue. II Gaspé cure.) By H. Fougère, p. 18–22.

Salting codfish. III—A quantitative study of yields. (Le salage de la morue. III—une étude de rendement.) By H. Fougère, p. 22–27.

The value of some common disinfectants and the use of water in the destruction of red halophiles. (L'effet de quelques désinfectants ordinaires et l'usage de l'eau dans la destruction de la bactérie du «rouge».) By C.H. Castell and E.G. Mapplebeck, p. 28–35.

Issue No. 53 (*April 1952*)

Fluctuating inshore water temperatures in the autumn. (Fluctuations dans la température des eaux côtières en automne.) By H.J. McLellan, p. 3–5.

Recent water temperatures along the Canadian Atlantic coast. (Récentes observations de températures des eaux de surface sur la côte canadienne de l'Atlantique.) By L. Lauzier, p. 5–7.

Moisture curves for light-salted cod. (Courbes d'équilibre pour la morue légèrement salée.) By J.R. Dingle, p. 8–9.

Issue No. 54 (*September 1952*)

The animal protein factor of cod liver. (Le facteur protéique animal due foie de morue.) By P.L. Hoogland, p. 3–6.

Absorption refrigeration in the fishing industry. (La réfrigération absorptive dans l'industrie du poisson.) By G.K. Gunnarsson, p. 7–11.

Changes in Digby scallop landings—how and why. (Nature et cause des variations dans les captures de pétoncles de Digby.) By Lloyd M. Dickie, p. 12–18.

Breakage—the bug-bear in clam handling. (Les coquilles brisées—un fléau dans la manipulation des coques.) By J.C. Medcof and J.S. MacPhail, p. 19–25.

Issue No. 55 (*March 1953*)

Bacteriology of light salted fish: sliming. (Bactériologie du poisson légèrement salé—le «graissage».) By H.P. Dussault, p. 3–7.

Effect of prolonged storage on the fate of red halophilic bacteria in contaminated salt. (Effet de l'entreposage prolongé sur le sort de la bacterie du «rouge» dans le sel contaminé.) By H.P. Dussault, p. 7–10.

The B-vitamins of cod and haddock. (Les vitamines B de la morue et de l'églefin.) By P.L. Hoogland, p. 11–14.

Do we need to gut flounders at sea? (Est-il nécessaire de trancher le poisson plat en mer?) By C.H. Castell and W.A. MacCallum, p. 14–17.

Relative importance of the factors causing spoilage of fish in boats at sea. (Importance relative des facteurs affectant la fraîcheur du poisson à bord de bateaux de pêche.) By C.H. Castell and W.A. MacCallum, p. 17–24.

Contaminated ice in the boats at sea. (Glace contaminée à bord.) By C.H. Castell and R.E. Triggs, p. 24–26.

Pen construction for refrigerated fish holds. (Compartimentage des cales à poisson réfrigérées.) By W.A. MacCallum, p. 27–30.

Issue No. 56 (*July 1953*)

Transfer rollers for fillet conveyor belts. (Rouleaux de transfert pour courroie transporteuse de filets.) By H.E. Power, p. 3–5.

The problem of slime in the sanitation of fish plants. (Le problème du mucus dans l'hygiène des usines à poisson.) By C.H. Castell, p. 5–9.

Reduction of bacterial contamination on fillets by washing the round fish and by the use of mechanical skinners. (Réduction de la contamination bactérienne par le lavage du poisson avant le tranchage et par l'emploi d'épiauteurs mécaniques.) By C.H. Castell, p. 10–14.

Improving the effectiveness of nitrite dips. (Pour accroître l'efficacité du trempage au nitrite.) By C.H. Castell, p. 14–17.

Cool storage of lightly salted fish in kench and under pickle. (Entreposage au frais de poisson légèrement salé en pile (à la rime) ou sous saumure.) By C.H. Castell, p. 17–23.

How to determine if atmospheric conditions are favourable for the artificial drying of salted codfish. (Comment déterminer si les conditions atmosphériques sont favorables au séchage artificiel de la morue salée.) By R. Legendre, p. 23–27.

Issue No. 57 (*November 1953*)

The fractionation of seal oil by means of furfural. (Le fractionnement de l'huile de phoque par le furfural.) By L.C. Dugal, p. 3–6.

Glucosamine from lobster shells. (La glucosamine tirée de la carapace de homard.) By P.L. Hoogland and R. St. C. Hiltz, p. 6–8.

Aluminum filleting table. (Table de filetage en aluminum.) By A.L. Wood and W.C. Angevine, p. 9–12.

Issue No. 58 (*April 1954*)

Destruction of "red halophiles" by antagonistic bacteria. (La destruction du «rouge» par des bactéries antagonistes.) By H.P. Dussault, p. 3–6.

Recent surface water temperatures along the Canadian Atlantic coast. Cold years—warm years. (Températures des eaux de surface sur la côte canadienne de l'Atlantique. Années froides—années chaudes.) By L. Lauzier, p. 6–11.

Marine bait-worms—a new Maritime industry. (Vers marins utilisés comme boëtte—une industrie nouvelle dans les provinces maritimes.) By J.S. MacPhail, p. 11–17.

Relative efficacy of baits for groundfish. (Valeur relative de la boëtte pour les poissons de fond.) By W.R. Martin and F.D. McCracken, p. 17–21.

Annual crops of speckled trout from a Prince Edward Island pond. (Le rendement annuel de la truite mouchetée dans un étang de l'Île-du-Prince-Édouard.) By M.W. Smith, p. 21–23.

Bottom temperatures on the Scotian Shelf. I. Spring (1952). (Les températures de l'eau du fond sur le plateau continental de la Nouvelle-Écosse. I. Printemps.) By H.J. McLellan, p. 23–27.

"Bilgy" fish. (Poisson «à odeur d'eau de cale».) By C.H. Castell, p. 27–31.

A note on the control of dun. (Note au sujet du contrôle du «dun».) By E.B. Vaisey, p. 32.

Issue No. 59 (*August 1954*)

Bruised condition of the American plaice. (Meurtrissure de la plie américaine.) By W. Templeman and T.K. Pitt, p. 3–6.

Capelin analyses. (Analyses de capelan.) By G.L. Andrews, p. 6–7.

Water conditions in the Strait of Canso before closing. (Les eaux dans le détroit de Canso avant la construction de la chaussée.) By H.J. McLellan, p. 7–12.

Bottom temperatures on the Scotian Shelf. II. Summer (1952). (Les températures de l'eau du fond sur le plateau continental de la Nouvelle-Écosse. II. Été (1952).) By H.J. McLellan, p. 12–15.

Preservation of fish in trawler holds. (Conservation du poisson en cale de chalutier.) By C.H. Castell and W.A. MacCallum, p. 15–18.

Preservation of fish in trawler holds. II. The effect of various types of pen surfaces on the keeping time of fish. (Conservations du poisson dans les compartiments de cale: influence du matériau dont sont constituées les parois.) By W.A. MacCallum, p. 18–22.

Preservation of fish in trawler holds. III. Screens as a protection against contaminated pen walls. (Emploi de treillis métallique protecteur dans les compartiments de cale.) By W.A. MacCallum, p. 22–27.

Domestic soap from seal oil. (Savon domestique à base d'huile de phoque.) By L.C. Dugal and A. Laframboise, p. 27–31.

Issue No. 60 (*December 1954*)

Trace elements and yellow coloration in salt fish. (Effet de certaines impuretés du sel sur la coloration jaune du poisson salé.) By W.J. Dyer and G.K. Gunnarsson, p. 3–4.

The control of dun in salt fish plants. (Contrôle du «dun» dans la préparation du poisson salé.) By E.B. Vaisey, p. 4–7.

The installation of a unit fish pen. (Installation d'un compartiment de cale unitaire.) By W.A. MacCallum, p. 7–9.

The influence of the quality of the fish in the fish plant on the subsequent keeping time in retail stores in Ontario. (Relation entre l'état de fraîcheur du poisson au départ de l'usine et la durée de conservation de ce poisson dans les magasins au détail de l'Ontario.) By C.H. Castell, W.A. MacCallum, and H.E. Power, p. 9–14.

Lobsters eaten by sea-fleas. (Homards dévorés par les puces de mer.) By W. Templeman, p. 14–15.

Section sampling of salt codfish for water content. (Échantillonnage de la morue salée pour l'analyse de la teneur en eau.) By W. Templeman, p. 15–17.

Bottom temperatures on the Scotian Shelf. III. Autumn (1952). (Les températures de l'eau du fond sur le plateau continental de la Nouvelle-Ecosse. III. Automne (1952).) By H.J. McLellan, p. 19–21.

Issue No. 61 (*March 1955*)

Dr. Guilford B. Reed (tribute to the late). By J.R. Dymond, p. 3.

Recent recoveries of tagged halibut. (Récentes recaptures de flétans étiquetés.) By F.D. McCracken and W.R. Martin, p. 4–5.

Food habits of seals in the Maritimes. (La nourriture des loups-marins des maritimes.) By H.D. Fisher and B.A. Mackenzie, p. 5–9.

Bottom temperatures on the Scotian Shelf. IV. Winter (1952). (Les températures de l'eau du fond sur le plateau continental de la Nouvelle-Écosse.) By H.J. McLellan, p. 10–11.

White specks on vinegar-cured herring. (Taches blanches apparaissant sur le hareng mariné au vinaigre.) By Beryl Truscott and P.L. Hoogland, p. 12–13.

Costs of metal unit pen fish holds. (Coût de compartiments à poisson métalliques.) By W.A. MacCallum, p. 13–21.

Issue No. 62 (*July 1955*)

Moisture determination of salt fish. (La teneur en eau du poisson salé.) By J.P. Hennessey, p. 3–4.

Cod landings from the Northwest Atlantic 1931–1953. (La pêche de la morue dans l'Atlantique nord-ouest 1931–1953.) By W. Templeman, p. 4–7.

A splitting table for small salt fish establishments. (Table de tranchage pour les petites usines à morue salée.) By R. Legendre and H. Fougère, p. 7–10.

Recovery of cod bile. (Récupération de la bile de morue.) By L.C. Dugal and A. Laframboise, p. 10–14.

Bottom temperatures on the Scotian Shelf (1952). V. Summary. (Les températures de l'eau du fond sur le plateau continental de la Nouvelle-Ecosse. V. Résumé.) By H.J. McLellan, p. 14–17.

Preliminary observations on effects of 1954 DDT spraying on Miramichi salmon stocks. (Observations préliminaires des effets de l'arrosage au DDT sur les stocks de saumon de la rivière Miramichi en 1954.) By C.J. Kerswill and P.F. Elson, p. 17–24.

Suitable holding conditions for live lobsters. (Conditions favorables pour garder les homards en captivité.) By D.W. McLeese and D.G. Wilder, p. 24–38.

Herring mortalities in the Bay of Chaleur in 1955. (Les mortalités du hareng dans la Baie des Chaleurs en 1955.) By A.H. Leim, p. 30–32.

Notes on handling fish on the trawler. (Notes sur la manutention du poisson à bord du chalutier.) By W.A. MacCallum, p. 32–38.

A new automatic salt fish washer. (Un nouveau laveur automatique pour le poisson salé.) By W.A. MacCallum, p. 38–43.

Issue No. 63 (*November 1955*)

The green crab—a new clam enemy. (Le crabe vert—un nouvel ennemi des coques.) By J.S. MacPhail, E.I. Lord and L.M. Dickie, p. 3–12.

Have Atlantic salmon been overfished? (La pêche au saumon de l'Atlantique a-t-elle été surexploitée?) By P.F. Elson, p. 13–15.

Summer surface temperatures in the Canadian Atlantic. (La température des eaux de surface dans l'Atlantique aux abords du Canada.) By W.B. Bailey, p. 16–18.

The Valleyfield–Badgers Quay commercial longlining experiment, 1954. (L'essai de pêche aux palangres de Valleyfield–Badgers Quai, 1954.) By H.D. Macpherson, p. 19–23.

Issue No. 64 (*February 1956*)

Movements and growth of lobsters in Egmont Bay, P.E.I. (Déplacements et croissance des homards de Egmont Bay, Î.P.-É.) By D.G. Wilder and R.C. Murray, p. 3–9.

Cod and haddock tagging off Lockeport, N.S. (Étiquetage de la morue et de l'aiglefin au large de Lockeport, N.-É.) By F.D. McCracken, p. 10–15.

Water temperatures around North America. (Températures de l'eau autour de l'Amérique du Nord.) By W.B. Bailey, p. 16–18.

Issue No. 65 (*October 1956*)

Oyster mortalities, old and new, in the Maritimes. (Mortalités chez les huîtres des provinces maritimes dans le passé et à l'heure actuelle.) By R.R. Logie, p. 3–11.

Effect of freezing on coliform bacteria and method of detection in frozen fish fillets and blocks. (Effet de la congélation sur les bactéries coliformes et méthode de détection dans les filets et les blocs de poisson congelé.) By H.P. Dussault, p. 12–16.

Difficulties in grading smelt. (Les difficultés dans le classement de l'éperlan.) By R.A. McKenzie, p. 17–20.

Les acides biliaires de la bile de morue. (The bile acids of cod bile.) By L.C. Dugal and A. Laframboise, p. 21–23.

Acid ensilage from cod and haddock offal. (Ensilage acide de déchet de morue et d'églefin.) By H.C. Freeman and P.L. Hoogland, p. 24–26.

Issue No. 66 (*September 1957*)

An experimental mechanical shellfish-digger. (Essais d'une bêche mécanique pour les mollusques.) By L.M. Dickie and J.S. MacPhail, p. 3–9.

Frozen storage of plaice for subsequent thawing and filleting. (Filets de plie congelée.) By W.J. Dyer, W.A. MacCallum, and Doris I. Fraser, p. 9–12.

Chlorination in fish plants. (Résultats de l'emploi du chlore dans les ateliers à poisson.) By H.P. Dussault, p. 13–16.

Changes occurring in the fat during the processing of salt fish. (Détérioration de la matière grasse du poisson au cours de la préparation de la morue salée.) By Aimé Cardin and M.A. Bordeleau, p. 16–20.

Two varieties of redfish in the Newfoundland area. (Deux variétés de chèvre dans la région de Terre-Neuve.) By W. Templeman and E.J. Sandeman, p. 20–23.

How temperature and crowding affect the holding of lobsters in artificial sea water. (Effets de la température et de l'encombrement sur les homards gardés en captivité dans l'eau de mer artificielle.) By D.G. Wilder and D.W. McLeese, p. 24–26.

Issue No. 67 (*November 1957*)

A survey of Irish moss on Grand Manan in 1955. (Etude sur la mousse d'Irlande à Grand Manan en 1955.) By A.R.A. Taylor, p. 3–5.

Results of cod tagging off eastern Nova Scotia. (Résultats d'étiquetage de la morue à l'est de la Nouvelle-Écosse.) By F.D. McCracken, p. 6–13.

Redfish exploration north of Flemish Cap. (Recherche de la chèvre au nord du Bonnet Flamand.) By W. Templeman, p. 14–18.

Feeding of eels in four New Brunswick salmon streams. (Le nourriture des anguilles de quatre rivières du Nouveau-Brunswick.) By H. Godfrey, p. 19–22.

Trimethylamine test for evaluating the quality of rosefish fillets. (Le test de triméthylamine pour déterminer la qualité du poisson rouge.) By H.P. Dussault, p. 23–25.

Redfish grow slowly. (Le poisson rouge (chèvre) est de croissance lente.) By E.J. Sandeman, p. 26–28.

The production of edible fish protein ("fish flour") from cod and haddock. (Farine de poisson comestible.) By A. Guttmann and F.A. Vandenheuvel, p. 29–31.

Cod eggs and herring larvae in late September an indication of fall spawning in the Gulf of St. Lawrence. By H.J. Squires, p. 31–33.

Recent publications issued by the Fisheries Research Board of Canada. (Publications récentes émises par l'Office des Recherches sur des Pêcheries du Canada.) p. 34.

Issue No. 68 (*January 1958*)

The effects of boring sponges on oysters. (Les effets des éponges perforantes sur les huîtres.) By F.E. Warburton, p. 3–8.

The commercial longlining experiment, St. Anthony, Nfld., 1955. (Essai de pêche aux palangres sur un pied commercial, St. Anthony, Terre-Neuve, 1955.) By A.M. Fleming, p. 9–14.

How cod spawn—Nielsen's observations. (Comment la morue fraye—observations de Nielsen.) By W. Templeman, p. 15–17.

A liver preservation procedure. (Préservation des foies de poisson.) By A. Guttmann and F.A. Vandenheuvel, p. 17–20.

Preliminary biology of Atlantic salmon of the Little Codroy River, Newfoundland. (Biologie préliminaire du saumon Atlantique de la Rivière Little-Codroy, Terre-Neuve.) By A.R. Murray, p. 20–27.

Recent publications issued by the Fisheries Research Board of Canada. (Publications rècentes émises par l'Office des Recherches sur des Pêcheries du Canada.) p. 27.

Issue No. 69 (*May 1958*)

Comparative effects of the insecticides DDT and malathion on young Atlantic salmon. Étude comparative des effets des insecticides DDT et malathion sur les jeunes saumons de l'Atlantique.) By Miles H.A. Keenleyside, p. 3–6.

Control of the boring sponge on oyster beds. (Suppression de l'éponge perforante sur les parcs d'huîtres.) By F.E. Warburton, p. 7–11.

Do lobsters move offshore and onshore in the fall and spring? (Les homards se déplacent-ils vers le large ou vers les côtes à l'automne et au printemps?) D.G. Wilder and R.C. Murray, p. 12–15.

Lobsters eaten by sea-fleas. A further note. (Homards dévorés par les puces de mer. Note complémentaire.) By W. Templeman, p. 16–17.

Recent oceanographic activities of the Atlantic Oceanographic Group in the eastern Arctic. (Récents travaux océanographiques du Groupe Océanographique de l'Atlantique dans le secteur est de l'Arctique.) By N.J. Campbell, p. 18–21.

Lath-spacing in lobster traps. (L'éspace entre les lattes dans casiers à homards.) By W. Templeman, p. 22–28.

White crystals of sodium phosphate on salt fish. (Des cristaux blancs de phosphate de sodium sur la morue salée.) By W.J. Dyer, Doris I. Fraser, and J.R. Dingle, p. 28–32.

First-year effects of mesh regulation on northern New Brunswick dragger fishery. (Note préliminaire sur les résultats de la règlementation des mailles de chalut sur la pêche au nord du Nouveau-Brunswick.) By W.R. Martin and Y. Jean, p. 39–40.

Issue No. 70 (*September 1958*)

Distribution of the inshore catch of cod in Newfoundland and Labrador waters in the years 1947 to 1949. (Répartition des prises côtières de morues à Terre-Neuve et au Labrador de 1947 à 1949.) By W. Templeman, p. 3–9.

Herring tagging in the Bay of Fundy (June to August, 1957). Étiquetage du hareng dans la baie de Fundy (de juin à août, 1957).) By R.A. McKenzie and S.N. Tibbo, p. 10–15.

Survival and utilization of Atlantic salmon of the Little Codroy River, Newfoundland. (La survivance et l'utilisation du saumon atlantique de la rivière Little-Codroy, Terre-Neuve.) By A.R. Murray, p. 16–22.

A simple method of checking on the sources of fillet contamination in fish plants. (Recherche des sources de contamination des filets de poisson, à l'usine: Méthode simple.) By C.H. Castell, p. 23–27.

Grand Bank tagged dogfish moves to Iceland. (Un chien de mer étiqueté sur le Grand Banc est recapturé en Islande.) By W. Templeman, p. 28–30.

Recent trends in the scallop fishery of eastern Canada. (Tendances récentes de la pêche aux pétoncles dans l'est du Canada.) By L.M. Dickie, p. 31–34.

Issue No. 71 (*December 1958*)

A comparison of various salt cod products. (Comparaison entre les nombreuses variétés de morue salée.) By F.W. van Klaveren and R. Legendre, p. 3–8.

Surface sea water temperatures along the Canadian Atlantic coast, 1954–1957. (Températures des eaux de surface sur la côte canadienne de l'Atlantique, 1954–1957.) By Louis Lauzier, p. 8–12.

Mold contamination in salt fish and method of control. (Moisissure du poisson salé et méthode de contrôle.) By H.P. Dussault, p. 13–16.

Fat hydrolysis in frozen fish. 1. Free fatty acid formation. (Hydrolyse des graisses du poisson congelé: 1. Formation d'acide gras libre.) By W.J. Dyer, Doris I. Fraser, and E.G. Bligh, p. 17–20.

Stock-taking of molluscan shellfish resources and prospects for improvement. (Inventaire des ressources en mollusques bivalves et perspectives d'amélioration.) By J.C. Medcof, p. 21–26.

Introducing European oysters to the Maritimes. (Introduction des huitres européennes dans les provinces maritimes.) By J.C. Medcof and Joan E. Mortimer, p. 27–29.

Issue No. 72 (*September 1959*)

Growth and parasites of cod during a year in captivity. (Croissance et parasites de morues gardées en captivité pendant une année.) By A.C. Kohler, p. 3–7.

Cod tagging off northern New Brunswick in 1955 and 1956. (Étiquetage de la morue au nord du Nouveau-Brunswick en 1955 et 1956.) By F.D. McCracken, p. 8–19.

Constituents of salt cod pickle. (Composition de la saumure de morue salée.) By F.W. van Klaveren and G. Vaillancourt, p. 19–22.

Squid inshore in Newfoundland and on the Grand Bank, 1953 to 1958. (Population cotière d'encornets (squid) à Terre-Neuve et sur le Grand Banc de 1953 à 1958.) By H.J. Squires, p. 23–26.

Drift-netting for herring along the south coast of Newfoundland. (La pêche au hareng avec des filets dérivants le long de la côte sud de Terre-Neuve.) By S.N. Tibbo, p. 27–32.

An international geophysical year project. (Contribution au programme de l'année géophysique internationale.) By Neil J. Campbell, p. 33–36.

Fat hydrolysis in frozen fish. 2. Relation to protein stability. (Hydrolyse des graisses dans le poisson congelé: 2. Relation à la stabilité des protéines.) By Doris I. Fraser and W.J. Dyer, p. 37–39.

Issue No. 73 (*August 1962*)

W.D.R. Cossaboom (obituary—nécrologie). By D.R. Idler, p. 3.

The utilization of fish skins for glue and other products. (Extraction de colles à partir de peaux de poissons.) By A. Guttman, p. 3–10.

Sea temperatures along the Canadian Atlantic Coast 1958–1960. (Températures des eaux le long de la côte canadienne de l'Atlantique, 1958–1960.) By L.M. Lauzier and J.H. Hull, p. 11–15.

Salt-fish flavour in frozen cod fillets prepared from stored frozen shore cod thawed in sea water. (Un goût de poisson salé dans des filets de morue congelés qui furent préparés avec de la morue congelée et dégelée dans l'eau de mer.) By W.J. Dyer, D.I. Fraser, G.J. Jewell, and L. Janes, p. 17–20.

List of titles of articles in Issues 1–72. (Liste de titres des articles dans les numéros 1 à 72) p. 21–40.

Subject–author index to Issues 1–73. (Index sujet–auteur aux numéros 1 à 73) p. 41–70.

The above Issue No. 73 concluded this series of Progress Reports of the Atlantic Coast Stations.

(b) PROGRESS REPORTS OF THE LONDON, ONTARIO, BIOLOGICAL STATION AND TECHNOLOGICAL UNIT

Abbreviation: PRC

Issue No. 1 (*September 1959*)

The sea lamprey control program in Lake Superior. By A.H. Lawrie, p. 3–5.

The establishment and operation of electrical barriers to sea lamprey migration on the Canadian tributaries to Lake Superior. By A.H. Lawrie, p. 6–8.

The engineering aspects of sea lamprey barrier design and operation. By W.J. Lenson and A.H. Lawrie, p. 9–14.

The operation and maintenance of Lake Superior sea lamprey barriers. By A.H. Lawrie and A. Carter, p. 15–17.

Big Creek direct-current guider barrier for sea lamprey control. By D.P. Scott, p. 18–21.

Preparations for lamprey control in Lake Huron. By J.J. Tibbles, p. 22–27.

Experiments on canning freshwater fish. II. Smelts from west end of Lake Erie. By A.W. Lantz and L.C. Dugal, p. 28–30.

Biology and control of the pike–whitefish parasitic worm, *Triaenophorus crassus*, in Canada. By G.H. Lawler, p. 31–37.

Refrigeration equipment applied in the mechanical chilling of fish during transport. By A.W. Lantz, p. 38–40.

Fisheries research at Great Slave Lake. By J.J. Keleher, p. 41–44.

Issue No. 2 (*May 1961*)

M.V. *Stenodus,* research vessel at Great Slave Lake. By K.G. Roberts and J.J. Keleher, p. 3–4.

The Lake Erie gear development project—1959. By A.W. Lantz, p. 5–14.

Ammocoete biology. By M.L.H. Thomas, p. 14–17.

The action of electrical barriers on sea lampreys. By R.W. McCauley, p. 18–21.

Fish and lamprey movements in Silver Creek, Ontario. By A. Lamsa, p. 21–24.

The operation of electrical barriers to sea lamprey migration on the Canadian tributaries to Lake Superior—1959 and 1960. By A.H. Lawrie and J.J. Tibbles, p. 25–26.

The development of specific lampricides and techniques for their use. By B.G.H. Johnson, p. 27–31.

Preparations for lamprey control in Lake Huron. By J.J. Tibbles, p. 32–35.

Can ultrasonics be used to control sea lampreys? By H.E. Cormack, p. 36.

Canning freshwater fish. III. By A.W. Lantz, p. 37–47.

Heming Lake experiment. By G.H. Lawler, p. 48–50.

Studies on the eggs and first intermediate stages of *Triaenophorus crassus* at Heming Lake, Manitoba. By N.H.F. Watson and G.H. Lawler, p. 51–52.

Freshwater fish grading equipment. By A.W. Lantz, p. 53–56.

The above Issue No. 2 concluded this series of Progress Reports.

(c) PROGRESS REPORTS OF FRB PACIFIC COAST STATIONS*

Abbreviation: PRP

Issue No. 1 (*1929*)

The Biological Board of Canada. Its organization and its Pacific stations, p. 3–4.

The Pacific Biological Station. By Wilbert A. Clemens, p. 5.

The Fisheries Experimental Station. By D.B. Finn, p. 6–8.

The Pacific Salmon Research Station, Cultus Lake, B.C. By R.E. Foerster, p. 9–11.

Issue No. 2 (*1929*)

A report on the return of sockeye salmon marked at Cultus Lake. By R.E. Foerster, p. 3–4.

The tagging of sockeye salmon. Anon., p. 5–6.

The tagging of coho salmon. Anon., p. 7–10.

Issue No. 3 (*1929*)

Changes in the oils of fish during cold storage. By H.N. Brocklesby, p. 3–5.

The production of glue from fish waste. By L.F. Smith, p. 5–8.

The tagging of pink salmon, 1928. Anon., p. 8.

The tagging of chum salmon, 1928. Anon., p. 9.

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*This table of contents lists all the articles; short anonymous news items are not listed by title, but the pages on which they appear (as referred to in the Index) are shown opposite the item "Notes" in the lists of contents.

Issue No. 4 (*1929*)

The economic effect of the Fraser River on the waters of the Strait of Georgia. By A.H. Hutchinson, p. 3–6.

Drying properties of pilchard oil. By O.F. Denstedt, p. 6–8.

A study of the shrimps of British Columbia. By Alfreda A. Berkeley, p. 9–10.

Summary of the results of tagging of spring salmon along the west coast of Vancouver Island and Queen Charlotte Islands in 1925, 1926, and 1927. By Wilbert A. Clemens, p. 11–13.

Issue No. 5 (*1930*)

The pile borer or "Teredo." By F.D. White, p. 3–6.

Refrigeration and its relation to the fishing industry. By D.B. Finn, p. 7–10.

The return from the sea in 1929 of sockeye salmon marked at Cultus Lake in 1927. By R.E. Foerster, p. 11–13.

Notes. p. 5.

Issue No. 6 (*July 1930*)

The control of discolouration or yellowing of halibut. By Robert H. Bedford, p. 3–5.

The hybridization of salmon. By R.E. Foerster, p. 6–8.

Commercial clams of British Columbia. By C. McLean Fraser, p. 9–12.

Issue No. 7 (*December 1930*)

The control of discolouration or yellowing of halibut. By Robert H. Bedford, p. 3–5.

Large scale production of fish glue. By L.F. Smith, p. 6–8.

The Kamloops trout. By C.McC. Mottley, p. 9–12.

Notes. p. 14.

Issue No. 8 (*March 1931*)

The new low temperature research laboratory and projected refrigeration research. By O.C. Young, p. 3–5.

The Skeena River investigation. By Donald C.G. MacKay, p. 6–10.

Temperature and propagation of trout. By C.McC. Mottley, p. 11–14.

Summary of the results of tagging of spring salmon in 1929 and 1930. By Andrew L. Pritchard, p. 15–20.

Issue No. 9 (*July 1931*)

Sockeye salmon feeding experiments, Smith Falls retaining ponds, Cultus Lake, B.C. By R.E. Foerster, p. 3–6.

The tagging of coho salmon in British Columbia during the years 1929 and 1930. By Andrew L. Pritchard, p. 7–11.

The tagging of pink and chum salmon in British Columbia in 1929. By Andrew L. Pritchard. p. 12–14.

Fish oils as food. By H.N. Brocklesby, p. 15–18.

Marine bacteria. By R.H. Bedford, p. 19–22.

Fish glue from fish waste. By L.F. Smith, p. 23.

Issue No. 10 (*October 1931*)

The Fifth Annual Conference. Anon., p. 3–4.

A report of the pink salmon investigations in British Columbia. By Andrew L. Pritchard. p. 5–9.

Experiment on pond retention of sockeye salmon. By R.E. Foerster, p. 10–13.

Hydrogenation of pilchard oil. By F. Charnley, p. 14–16.

The use of pilchard oil in protective coatings. By O.F. Denstedt, p. 17–18.

A study of the mud deposits on the gill nets in the Naas River district, British Columbia, p. 19–20.

Issue No. 11 (*December 1931*)

The decolorization of fish oils. By H.N. Brocklesby, p. 5–6.

Investigations in refrigeration. By O.C. Young, p. 7–9.

The propagation of trout. By C.McC. Mottley, p. 10–13.

The growth of some marine and other bacteria at low temperatures. By Robert H. Bedford, p. 14–17.

The edible crab of the Pacific coast. By Donald C.G. MacKay, p. 18–21.

Composition and vitamin potency of oils from canned salmon. By B.E. Bailey, p. 22–23.

The food of pilchards. By John Lawson Hart and George Herbert Wailes, p. 24–28.

Issue No. 12 (*May 1932*)

Vitamin "A" in Pacific coast fish liver oils. By H.N. Brocklesby, p. 3–6.

The oceanography of the fiords of southern British Columbia. By Neal M. Carter, p. 7–11.

Local populations of herring. By Albert L. Tester, p. 12–14.

Notes. p. 15.

Issue No. 13 (*July 1932*)

The salting of herring. By Neal M. Carter, p. 3–7.

The food of the Kamloops trout. By C.McC. Mottley and Jean C. Mottley, p. 8–12.

The vitamin D potency of oils from B.C. canned salmon. By B.E. Bailey, p. 13.

Do fish react to noise? By V.H.K. Moorhouse, p. 14–15.

Issue No. 14 (*October 1932*)

Advances in knowledge of freezing. By D.B. Finn, p. 3–5.

Experimental tests of the methods used in the artificial spawning and fertilization of sockeye salmon eggs. By R.E. Foerster, p. 5–11.

The dehydration of fish in cold storage. By O.C. Young, p. 12–13.

Analysis of Pacific coast porpoise oils. By P.A. Sunderland, p. 14–15.

Issue No. 15 (*December 1932*)

Japanese oysters breed in Ladysmith harbour, B.C. By C.R. Elsey, p. 3–5.

The hydrolysis of the body oil of the salmon. By H.N. Brocklesby. p. 5–7.

Furunculosis in British Columbia. By D.C.B. Duff, p. 7–9.

The return of marked pink salmon in 1932. By A.L. Pritchard, p. 10–11.

The relation between coil area, temperature of cooling medium and dehydration in a cold storage room. By O.C. Young, p. 11–14.

Issue No. 16 (*March 1933*)

The chemical composition and food value of B.C. canned sockeye and pink salmon. By Neal M. Carter, p. 3–6.

Progress in vitamin research. By B.E. Bailey, p. 7–9.

Experimental tests of the safe carrying capacity of a standard hatchery trough for sockeye salmon eggs and fry. By R.E. Foerster, p. 10–13.

The investigation of pollution by pilchard reduction plants. By John Lawson Hart, p. 14–15.

Issue No. 17 (*October 1933*)

Twenty-fifth anniversary of the Pacific Biological Station, Nanaimo. By W.A. Clemens, p. 3–4.

Advances in knowledge of freezing. II. By D.B. Finn, p. 5–7.

The salting of "round" herring. By Neal M. Carter, p. 8–12.

The "roof tank" refrigerator car. By O.C. Young, p. 13–15.

Issue No. 18 (*December 1933*)

Destruction of sockeye salmon by predatory fishes. By W.E. Ricker, p. 3–4.

The hydrolysis of the body oil of salmon. The effect of canning. By H.N. Brocklesby, p. 5–6.

The red discoloration of "rusting" of frozen fish in cold storage. By Robert H. Bedford, p. 7–9.

The age and growth of herring in British Columbia. By Albert L. Tester, p. 10–13.

Notes. p. 14.

Issue No. 19 (*April 1934*)

The food of the squawfish. By W.A. Clemens and J.A. Munro, p. 3–4.

Seasonal variation in the vitamin D potency of pilchard oil. By Basil E. Bailey, p. 5–6.

Changes in the composition of pilchard oil on hydrogenation. By F. Charnley, p. 7–10.

The trout of streams and small lakes in southern British Columbia. By C.McC. Mottley, p. 11–13.

The small scale canning of Pacific oysters. By J.P. Tully, p. 14–16.

Refrigerator car tests. By O.C. Young, p. 17–19.

The chemical composition and food value of British Columbia marine products, p. 20–23.

Notes. p. 6, 10, 23.

Issue No. 20 (*July 1934*)

The interpretation of the recoveries of marked pink salmon in 1933. By A.L. Pritchard, p. 3–5.

Some uses of hydrogenated pilchard oil. By F. Charnley, p. 6–8.

Preserving fresh halibut aboard ship. By R.H. Bedford, p. 9–13.

Effluent losses at pilchard reduction plants. By Desmond Beall, p. 14–15.

Preliminary analyses of British Columbia oysters. By Werner Freudenberg, p. 16–18.

Notes. p. 8.

Issue No. 21 (*September 1934*)

The fishing industry and science. By Neal M. Carter, p. 3–6.

The shipworm. By E.C. Black, p. 7–9.

Curd in canned salmon. By O.F. Denstedt and B.E. Bailey, p. 10–13.

Plankton organisms and their relation to the sockeye of Cultus Lake. By W.E. Ricker, p. 14–17.

Some uses of hydrogenated pilchard oil. By F. Charnley, p. 18–20.

Notes. p. 6, 13.

Issue No. 22 (*December 1934*)

Oceanography. By J.P. Tully, p. 3–7.

Methods for the production of oils from fish livers of low oil content. By H.N. Brocklesby and K. Green, p. 8–10.

Cooling and freezing curves for fish. By O.C. Young, p. 11–14.

A note on bacteria and low temperature storage. By R.H. Bedford, p. 14–15.

The nutritive value of chum salmon egg products. By B.E. Bailey, p. 15–16.

The recovery of marked pink salmon in 1934. By A.L. Pritchard, p. 17–18.

Distribution of oyster larvae. By C.R. Elsey, p. 19–20.

Migrations of the Pacific edible crab. By Donald C.G. MacKay, p. 21–23.

Notes. p. 7, 24.

Issue No. 23 (*April 1935*)

The sharks of British Columbia waters. By W.A. Clemens and G.V. Wilby, p. 3–6.

Publications on the vitamin properties and industrial applications of fish oils investigated at the Pacific Fisheries Experimental Station. By Neal M. Carter, p. 7–10.

Further progress in studies of variations in vitamin potency of pilchard oil. By B.E. Bailey, p. 11–13.

Beef liver for feeding fish should be kept fresh. By William A. Riddell, p. 14–15.

The herring run in Prince Rupert Harbour. By P.A. Sunderland, p. 16–17.

British Columbia oysters are a valuable food. By John P. Tully, p. 18–21.

Magnesium ammonium phosphate, the glass-like crystals in canned salmon. By R.H. Bedford. p. 22–24.

Notes. p. 17, 24.

Issue No. 24 (*July 1935*)

Some properties of pilchard-oil paint films. By O.F. Denstedt, p. 3–5.

The selectivity of herring drift nets. By Albert L. Tester, p. 6–10.

Publications from the Pacific Fisheries Experimental Station on technology of fisheries products other than fish oils. By Neal M. Carter, p. 11–14.

Pilchard possibilities. By John Lawson Hart, p. 15–17.

Some desirable properties of a glaze for frozen fish. By O.C. Young, p. 18–20.

An experiment in the artificial fertilization of water. By G. Clifford Carl, p. 21–22.

Cleaning drums for pilchard oil. By Basil E. Bailey, p. 23–24.

Issue No. 25 (*October 1935*)

The preservation of fishing nets. By Neal M. Carter and Frank Charnley, p. 3–8.

The rays of British Columbia waters. By W. A. Clemens and G.V. Wilby, p. 9–12.

The economical utilization of Canadian pilchard oil. By H.N. Brocklesby, p. 13–17.

The occurrence of unauthentic marked salmon. By R.E. Foerster, p. 18–20.

Kurosio. By John P. Tully, p. 21–22.

Notes. p. 12, 20.

Issue No. 26 (*December 1935*)

The efficiency of white and black ponds in pond culture. By C. McC. Mottley and S.E. Deno. p. 3–4.

Weather and the ocean. By John P. Tully, p. 5–10.

Cooling and freezing curves for fish II. By O.C. Young, p. 12–16.

The economical utilization of Canadian pilchard oil. Anon., p. 16.

The vitamin A potency of the liver oils from some miscellaneous Pacific coast fishes. By Basil E. Bailey, p. 17–18.

Ambergris. By Neal M. Carter, p. 19–20.

Notes. p. 11.

Issue No. 27 (*April 1936*)

The classification of the rainbow trout of British Columbia. By C. McC. Mottley, p. 3–5.

The feeding rate of Pacific oysters. By C.R. Elsey, p. 6–7.

Sea water conditions and the herring fishery in Prince Rupert harbour. By P.A. Sunderland, p. 8–10.

Some discolorizations of stored fresh and frozen fish and their control. By R.H. Bedford, p. 11–14.

Notes. p. 15.

Issue No. 28 (*July 1936*)

The egg content of Pacific salmon. By R.E. Foerster and A.L. Pritchard, p. 3–5.

Fish oil "stearic acid" in rubber manufacture. By H.N. Brocklesby, p. 6–10.

The eastern whitefish in British Columbia. By J.L. McHugh, p. 11–13.

Softness of canned salmon. By F. Charnley, p. 14–17.

Notes. p. 18, 19.

Issue No. 29 (*October 1936*)

Refrigerator car tests II. By O. C. Young, p. 3–7.

The sea lamprey and the hagfish. By W.A. Clemens and G.V. Wilby, p. 8–9.

Artificial stimulation of spawning in the Pacific oyster. By C.R. Elsey, p. 10–11.

Colour in canned salmon. By F. Charnley, p. 12–16.

Facts concerning the coho salmon (*Oncorhynchus kisutch*) in the commercial catches of British Columbia as determined from their scales. By A.L. Pritchard, p. 16–20.

Notes. p. 20.

Issue No. 30 (*December 1936*)

Summer herring from Klemtu. By Albert L. Tester, p. 3–6.

The hooked snout in the Salmonidae. By C. McC. Mottley, p. 9–10.

The free oil content of canned salmon. By F. Charnley, p. 11–15.

Ocean currents. By John P. Tully, p. 16–19.

The approximate composition of Canadian pilchard oil. By H.N. Brocklesby, p. 19–20.

Notes. p. 6.

Issue No. 31 (*March 1937*)

Variations in the vitamin A content of the liver oil of the greyfish (*Squalus sucklii*). By L.I. Pugsley, p. 3–5.

New devices for collecting seed oysters. By C.R. Elsey, p. 6.

Pilchard tag returns from British Columbia and California fishing grounds. By John Lawson Hart, p. 7–10.

Tracing the movements of herring. By John Lawson Hart and Albert L. Tester, p. 11–13.

Phenolated pilchard oil. By W.A. Riddell, p. 14–15.

A warmer summer. By John P. Tully, p. 16–18.

Tagging mortality of herring. By John Lawson Hart and Albert L. Tester, p. 19–20.

Notes. p. 18.

Issue No. 32 (*June 1937*)

Vacuum in canned salmon. By D.H. Goard and F. Charnley, p. 4–8.

Freezer studies. By O.C. Young, p. 9–12.

Gradient currents. By John P. Tully, p. 13–14.

An experiment with kokanee salmon. By R.E. Foerster, p. 15–16.

The measurement of pilchard oil in bulk. By Neal M. Carter, p. 17–20.

Increasing the survival rate of young sockeye salmon by removing predatory fishes. By R.E. Foerster, p. 21–22.

Issue No. 33 (*September 1937*)

The findings of the British Columbia pink salmon investigation. I Introduction and general observations. By A.L. Pritchard, p. 3–6.

Methods for the production of oils from fish livers of low oil content. II. A note on a modified digestion process. By H.N. Brocklesby and K. Green, p. 7.

The distribution of vitamins A and D in some organs of British Columbia herring, pilchard, grayfish and halibut. By L.I. Pugsley, p. 8–10.

Seasons in the sea. By John P. Tully, p. 11–12.

Chemical and biochemical studies of halibut. I. Iced and frozen muscle juice. By W.A. Riddell, H.N. Brocklesby, and L.I. Pugsley, p. 13–16.

Chemical and biochemical studies of halibut. II. Iced fish. By H.N. Brocklesby and W.A. Riddell, p. 17–19.

The free aqueous liquor in canned salmon. By R.S. Bolton and F. Charnley, p. 20–22.

Bacteria in the gut of line caught halibut. By R.H. Bedford, p. 23–24.

Notes. p. 10.

Issue No. 34 (*December 1937*)

The vitamin A content of grayfish liver oil (*Squalus sucklii*). By L.I. Pugsley, p. 3–7.

The findings of the British Columbia pink salmon investigation. II—Marking experiments and natural propagation. By A.L. Pritchard, p. 8–12.

Why is the water along the west coast of Vancouver Island so cold? By John P. Tully, p. 13–15.

Gear and bait for grayfish and sharks. By P.A. Sunderland, p. 16–17.

Refrigerator car tests III. By O. C. Young, p. 18–22.

Issue No. 35 (*March 1938*)

Return of herring tags during the 1937–38 season. By John Lawson Hart and Albert L. Tester, p. 3–6.

Can sunburn affect fish in hatchery ponds? Anon., p. 6.

The vitamin A and D potency of herring body oil. By L.I. Pugsley, p. 7–8.

Returns of pilchard tags applied in 1936 and 1937. By John Lawson Hart, p. 9–11.

The vitamin A and D potency of a British Columbia shark liver oil. By L.I. Pugsley, p. 12–13.

A note on the vitamin content of visceral oils from British Columbia halibut and cods. By L.I. Pugsley, p. 13.

The findings of the British Columbia pink salmon investigation. III—Attempts to build an "off" year run in Masset Inlet. By A.L. Pritchard, p. 14–17.

"Ices." By O.C. Young, p. 18–22.

Notes. p. 24.

Issue No. 36 (*June 1938*)

A comparison of the seasonal growth rates of young sockeye salmon and young squawfish in Cultus Lake. By W.E. Ricker, p. 3–5.

Why collect herring statistics? By Albert L. Tester, p. 5–6.

The preservation of halibut livers and intestines. By H.N. Brocklesby and K. Green, p. 7–10.

Note on the oils from the hair seal and sea lion. By L.I. Pugsley and K.F. Harding. p. 10–11.

A spawning run of brown trout in the Cowichan River system. By Clifford Carl, p. 12–13.

The removal of vitamin A from oils by soaps formed in situ. By H.N. Brocklesby and C.C. Kuchel, p. 14–15.

The measurement of herring oil in bulk. By Neal M. Carter, p. 16–19.

Predator control in relation to sockeye salmon conservation. By R.E. Foerster, p. 20–22.

The vitamin A potency of gray cod, ling cod, and red cod liver and visceral oils. By L.I. Pugsley, p. 22–24.

Issue No. 37 (*September 1938*)

What time of day are herring caught? By Albert L. Tester, p. 3–6.

Preliminary note on the keeping quality of lightly smoked fish. By H.L.A. Tarr and P.A. Sunderland, p. 7–11.

The quality of fresh, frozen and stored halibut as determined by a tasting panel. By O.C. Young, p. 12–16.

Spiced surf smelts. By P.A. Sunderland, p. 17–18.

Chemical analyses of herring. By John Lawson Hart, Albert L. Tester, Desmond Beall, and John P. Tully, p. 19–21.

Issue No. 38 (*December 1938*)

The effect of exposure of fresh fillets to ultraviolet light on their subsequent keeping quality. By H.L.A. Tarr, O.C. Young, and P.A. Sunderland, p. 3–6.

Further studies on the vitamin D potency of herring and pilchard oil. By L.I. Pugsley, p. 7–9.

Herring, the tide, and the moon. By Albert L. Tester, p. 10–14.

The yields and vitamin A and D potency of the liver and visceral oils of gray cod (*Gadus macrocephalus*). By L.I. Pugsley, p. 15–16.

The efficiency of magnets installed in British Columbia reduction plants in recovering sardine tags. By John Lawson Hart, p. 16–18.

The early returns from pilchard tagging off the west coast of Vancouver Island in 1938. By John Lawson Hart, p. 18–20.

Issue No. 39 (*March 1939*)

The vitamin D potency of British Columbia pilchard oil as related to yield. By L. I. Pugsley, p. 3–4.

Return of herring tags during the 1938–39 season. By John Lawson Hart and Albert L. Tester, p. 5–9.

Salmon angling in Cowichan Bay. By G.C. Carl, p. 9–12.

The role of preservatives in enhancing the keeping quality of fresh fillets. By H.L.A. Tarr and P.A. Sunderland, p. 13–16.

Ultraviolet light as a sterilizing agent for brines or pickles. By O.C. Young, H.L.A. Tarr, and P.A. Sunderland, p. 16–18.

The British Columbia clam problem. By D.B. Quayle, p. 19–20.

Herring and herring food at Klemtu Passage. By Albert L. Tester and Rex V. Boughton, p. 21–22.

Issue No. 40 (*June 1939*)

The flatfishes of British Columbia waters. By W.A. Clemens and G.V. Wilby, p. 3–5.

Canned smoked oysters. By P.A. Sunderland, p. 6–7.

Distribution of oyster larvae from the 1936 spawning in Ladysmith Harbour. By C.R. Elsey and D.B. Quayle, p. 8–10.

The possible occurrence of a toxic material in clams and mussels. By L.I. Pugsley, p. 11–13.

The preservation of fresh and lightly smoked fish with special reference to the use of nitrites and to their influence on the colour of treated products. By H.L.A. Tarr and P.A. Sunderland, p. 14–17.

The eulachon. By J.L. McHugh, p. 17–22.

Issue No. 41 (*September 1939*)

Canned smoked salmon. By P.A. Sunderland, p. 3–5.

Natural propagation of pink salmon in Masset Inlet, British Columbia. By A.L. Pritchard, p. 6–7.

The nutritive value of the flesh of red and white spring salmon. By Basil E. Bailey, p. 8–9.

The Kwakshua serring run. By Albert L. Tester and Rex V. Boughton, p. 10–14.

A note on a preservative ice containing sodium nitrite. By H.L.A. Tarr and P.A. Sunderland, p. 15–16.

The value of the bones of canned salmon in the prevention and cure of rickets. By Basil E. Bailey, p. 17–19.

Vertebral number in young British Columbia herring. By John Lawson Hart and J. Laurence McHugh, p. 20–21.

Notes. p. 14, 22.

Issue No. 42 (*December 1939*)

The food of spring salmon in British Columbia waters during 1939. By A.L. Pritchard and A.L. Tester, p. 3–7.

Preservation of salmon eggs for bait. By Neal M. Carter, p. 8–9.

Chum salmon products. By P.A. Sunderland, p. 10–12.

Herring runs north of Vancouver Island. By Rex V. Boughton, p. 12–15.

Further tasting panel tests on frozen and stored fish. By O.C. Young, p. 16–20.

Preliminary report on ling cod tagging. By John Lawson Hart, p. 20–21.

Salmon angling records from Cowichan Bay. By Ferris Neave, p. 22–24.

Notes. p. 7.

Issue No. 43 (*March 1940*)

Experiments on the preparation of shrimps for freezing. By O.C. Young, p. 3–5.

Growth of young herring in Departure Bay in 1939. By J.L. McHugh, p. 6–7.

Japanese oyster propagation. By D.B. Quayle, p. 8–9.

The preservation of fillets. By H.L.A. Tarr, p. 10–13.

Observations on the sockeye salmon run at Lakelse Lake (Skeena River) in the year 1939. By A.L. Pritchard and W.M. Cameron, p. 14–16.

Issue No. 44 (*June 1940*)

Progress in marine animal oil research. By H.N. Brocklesby, p. 4–8.

The age of spring salmon in the commercial catches in British Columbia. By A.L. Pritchard, p. 9–11.

Brining fillets in order to enhance keeping quality and to prevent "drip." By H.L.A. Tarr and P.A. Sunderland, p. 12–14.

Growth in ling cod. By John Lawson Hart, p. 14–15.

Conditions under which nitrites inhibit bacterial spoilage of fish. By H.L.A. Tarr and P.A. Sunderland, p. 16–17.

Where does the eulachon spawn? By J.L. McHugh, p. 18–19.

Issue No. 45 (*September 1940*)

Halibut "cheeks" canned in jelly. By P.A. Sunderland, p. 4–6.

Freezer studies II. By O.C. Young, p. 7–11.

Laredo herring. By R.V. Boughton, p. 12–14.

The return of herring tags during the 1939–40 season. By John Lawson Hart and Albert L. Tester, p. 14–17.

Canned smoked abalones. By P.A. Sunderland, p. 18–19.

Drip in unfrozen and frozen fillets controlled by brining. By H.L.A. Tarr and P.A. Sunderland, p. 19–20.

Progress in marine animal oil research. By H.N. Brocklesby, p. 21–22.

The efficiency of fertilization in the natural spawning of Pacific salmon. By W.M. Cameron, p. 23–24.

Notes. p. 6, 17, 24.

Issue No. 46 (*November 1940*)

Canned smoked black cod (sablefish). By P.A. Sunderland, p. 3–5.

How to identify some common British Columbia clams. By D.B. Quayle, p. 6–11.

Separation of fish oil components by adsorption. By L.A. Swain, p. 12–13.

The mortality of salmon in Cowichan Bay, 1940. By R.E. Foerster and J.P. Tully, p. 14–17.

Progress in vitamin D research. By B.E. Bailey, p. 18–19.

The steelhead in the Cowichan River. By Ferris Neave, p. 20–21.

Notes. p. 19.

Issue No. 47 (*March 1941*)

Thawing of fish. I. By O.C. Young, p. 3–5.

Formation of drip in fish muscle and its control in defrosted fish. By H.L.A. Tarr, p. 5–9.

Queen Charlotte Sound herring. By Albert L. Tester, p. 10–11.

The relative activities of combined and free forms of fish-oil vitamin D. By Basil E. Bailey with Kenwood Green, p. 12–13.

The food of spring salmon in British Columbia waters in 1940. By A.L. Pritchard and A.L. Tester, p. 14–18.

Return of marked cohos to the Cowichan River, 1940. By Ferris Neave, p. 19–20.

Notes. p. 11, 13.

Issue No. 48 (*June 1941*)

The mortality of young pilchards, 1941. By R.E. Foerster, p. 3–8.

History of the halibut liver oil industry on the Pacific coast. By L.A. Swain, p. 9–12.

The recovery of marked Masset Inlet pink salmon during the season of 1940. By A.L. Pritchard, p. 13–17.

The Japanese "little neck" clam accidentally introduced into British Columbia waters. By D.B. Quayle, p. 17–18.

Loss of free liquid on heating brined and unbrined, unfrozen and defrosted, fillets. By H.L.A. Tarr, p. 19–20.

Issue No. 49 (*September 1941*)

Light-bending properties of "drip" from stored halibut. By E.P. Sidaway, p. 3–5.

Cowichan cohoes in the commercial catch. By Ferris Neave, p. 6–7.

A direct method for counting bacteria in fish flesh. By H.L.A. Tarr, p. 8–10.

Slow-growing herring from Smith Inlet. By R.V. Boughton, p. 11–12.

The concentration of vitamin A by adsorption. By L.A. Swain, p. 13–16.

Killer whales stranded near Masset. By W.M. Cameron, p. 17.

Eulachon catch statistics. By J.L. McHugh, p. 18–19.

Notes. p. 10, 17, 19.

Issue No. 50 (*December 1941*)

The Queen Charlotte Sound herring population. By John Lawson Hart, Albert L. Tester, and J.L. McHugh, p. 3.

Vitamin A Investigations:

- i. Some factors in vitamin A production. By H.N. Brocklesby and N.I. Rogers, p. 4–8.
- ii. Preparation of vitamin A alcohol for adsorption. By L.A. Swain, p. 8–10.
- iii. The preparation of vitamin A oils from dogfish livers. By B.E. Bailey, p. 10–12.
- iv. A note on the fluorescent analysis of vitamin A. By H.N. Brocklesby and N.I. Rogers, p. 12–13.

"Belly burn" in Nanoose Bay herring. By Albert L. Tester, p. 14–15.

Thawing of fish. II. By O.C. Young, p. 16–20.

Some natural enemies of the clam in British Columbia. By D.B. Quayle, p. 21–22.

Issue No. 51 (*March 1942*)

Recoveries of Cowichan River coho salmon from the 1938 brood year emphasize the value of marking experiments. By Ferris Neave and A. L. Pritchard, p. 3–7.

What did the tagging of coho salmon at Skutz Falls, Cowichan River, reveal? By A.L. Pritchard and Ferris Neave, p. 8–11.

Ammonia evaporators. By O.C. Young, p. 12–15.

Reproduction in the dogfish. By J.L. Hart, p. 16–17.

Vitamins A and D in whale livers. By B.E. Bailey, p. 18–19.

The use of dynamite in teredo control. By D.B. Quayle, p. 20.

Notes. p. 7, 19.

Issue No. 52 (*September 1942*)

Canned herring. By E.P. Sidaway, p. 3–6.

Pressure cooling. By O.C. Young, p. 7–9.

Albacore food. By J.L. Hart, p. 9–10.

Herring mortality along the south-east coast of Vancouver Island. By Albert L. Tester, p. 11–15.

Sand fleas and live bait. By John Lawson Hart, p. 16–17.

Vacuum in canned herring. By O.C. Young and E.P. Sidaway, p. 19–23.

Volatile base content of certain Pacific coast fish prior to and subsequent to canning. By H.L.A. Tarr, p. 24–26.

Notes. p. 15, 18, 23.

Issue No. 53 (*December 1942*)

The food of spring salmon in British Columbia waters in 1941. By A.L. Pritchard and A.L. Tester, p. 3–6.

Vitamin A investigations. V. The adsorption of vitamin A from treated dogfish liver oil. By L.A. Swain, p. 7–9.

Chart of the nutritive values of British Columbia fishery products. By B.E. Bailey, p. 9–11.

Whitening razor clams for canning. By E.P. Sidaway, p. 14–15.

A high mortality of herring eggs. By Albert L. Tester, p. 16–19.

Issue No. 54 (*March 1943*)

Notes on hake liver oil. By B.E. Bailey, p. 4–5.

Salmon angling in Cowichan Bay, Vancouver Island. By A.L. Pritchard, p. 6–8.

The age of chum salmon taken in the commercial catches in British Columbia. By A.L. Pritchard, p. 9–11.

Seasonal settlement of shipworm larvae. By Ferris Neave, p. 12–14.

The stability of vitamin A during the household storage of medicinal oils. By B.E. Bailey, p. 15–17.

Notes. p. 20.

Issue No. 55 (*June 1943*)

Locating herring with an echo sounder. By Albert L. Tester, p. 4–6.

The stinging action of jellyfishes. By Neal M. Carter, p. 7–9.

Notes on the food of coho salmon in British Columbia. By A.L. Pritchard and Albert L. Tester, p. 10–11.

Concentrating clam nectar by freezing. By Neal M. Carter, p. 13–15.

A rapid cold test method for fish oils. By Basil E. Bailey, p. 16–17.

"Pearl essence" from scales of British Columbia herring. By Neal M. Carter, p. 18–20.

Notes. p. 9, 12.

Issue No. 56 (*September 1943*)

"Setting" of oysters in British Columbia. By Ferris Neave, p. 3.

An air-conditioned tunnel for processing fish. By E.P. Sidaway and O.C. Young, p. 4–5.

Comparison of eulachon catch statistics for three years. By John Lawson Hart, p. 6.

The dehydration of fish. By O.C. Young and E.P. Sidaway, p. 7–9.

Rate of growth in ling cod. By John Lawson Hart, p. 10–11.

The unsaponifiable matter of dogfish liver oil. By Lyle A. Swain, p. 11.

Chemical preservation of fish for bait. By H.L.A. Tarr, p. 12–14.

Abundance of *Cystophyllum geminatum* in the Strait of Georgia. By R.E. Foerster, p. 14.

Pacific mackerel, *Pneumatophorus diego*. By R.E. Foerster, p. 15.

Katsuwonus and *Trachipterus* in British Columbia. By John Lawson Hart, p. 16.

Notes. p. 15.

Issue No. 57 (*December 1943*)

Migration of ling cod. By John Lawson Hart, p. 3–7.

Results of the 1942 pink salmon marking at Morrison Creek, Courtenay, B.C. By A.L. Pritchard, p. 8–10.

Nutritive values of fishery products. By Basil E. Bailey, p. 11.

Changes in size of fish comprising the pilchard run. By John Lawson Hart, p. 12–14.

Changes in moisture, micro-organisms and volatile bases in dehydrated fish during processing and storage. By H.L.A. Tarr, p. 16–20.

Issue No. 58 (*March 1944*)

The Pacific coast dogfish and shark liver oil industry. By Lyle A. Swain, p. 3–7.

Pink salmon tagging experiments during 1943 in southern British Columbia and the Puget Sound area of the State of Washington. By A.L. Pritchard and A.C. DeLacy, p. 8–12.

Examination of the unsaponifiable matter of fish liver oils. By Betty H. Morton, p. 13–16.

The herring situation in the Strait of Georgia. By Albert L. Tester, p. 17–19.

The preparation of marinated herring. By E.P. Sidaway, p. 20–22.

Issue No. 59 (*June 1944*)

Tag returns from Kwakshua Passage herring, 1943–44. By Albert L. Tester, p. 3–6.

Germicidal sprays and prevention of corrosion. By H.L.A. Tarr, p. 7–9.

Flatfishes in Skidegate Inlet. By John Lawson Hart, p. 10–11.

A comparison of some British Columbia softwoods for smoking fish. By E.P. Sidaway, p. 12–14.

Direct bacterial counts and trimethylamine tests as criteria of quality of British Columbia flounders and gray cod. By H.L.A. Tarr, p. 15–18.

Notes. p. 19, 20.

Issue No. 60 (*August 1944*)

Author index to issues 1 to 60, p. 3–13.

Subject index to issues 1 to 60, p. 14–23.

Issue No. 61 (*November 1944*)

The spread of the Japanese little-neck clam in British Columbia waters. By Ferris Neave, p. 3.

The legal size-limit in relation to the size at which butter clams mature. By Ferris Neave, p. 4–5.

Some characteristics of the liver and visceral oils of British Columbia flatfishes. By Betty H. Morton, p. 6–7.

Sockeye salmon tagging off the Skeena River in 1944. By A.L. Pritchard, p. 8–12.

"Fish poisoning." By H.L.A. Tarr, p. 13–15.

A mackerel shark. By Lyle A. Swain and E.P. Sidaway, p. 16.

Pacific oyster reproduction in 1944. By Ferris Neave, p. 16.

Echo sounding for summer herring. By Albert L. Tester, p. 17–20.

Notes. p. 12, 22, 23, 24.

Issue No. 62 (*March 1945*)

A sockeye salmon tagging experiment in Lakelse Lake. By A.L. Pritchard and J.R. Brett, p. 4–6.

Direct bacterial counts and carbon dioxide tests as criteria of quality of lemon soles and herring. By H.L.A. Tarr, p. 7–9.

Common names for British Columbia flatfish. By J.L. Hart, p. 10–11.

Germicidal sprays. By H.L.A. Tarr, p. 12–13.

Observations on the upstream migration of the coho salmon spawning runs in the Cowichan River. By A.L. Pritchard, p. 14–16.

Refrigerator car tests. IV. By O.C. Young, p. 17–20.

The complete freezing of fish flesh. By P.J. Frost and Neal M. Carter, p. 21–23.

Log-book records to collect catch statistics from the otter trawl fishery. By J.L. Hart, p. 24.

Notes. p. 6, 10, 13, 20.

Issue No. 63 (*August 1945*)

Canning of salmon in a home kitchen. By Neal M. Carter, p. 27–31.

Examination of the unsaponifiable matter of marine animal oils. II. Dogfish liver oil. By Lyle A. Swain, p. 32–34.

Preliminary report on age and growth of lemon soles from British Columbia fishing grounds. By Keith S. Ketchen, p. 35–37.

Fish pastes. By E.P. Sidaway, p. 38–40.

Anchovy products. By E.P. Sidaway and O.C. Young, p. 41–42.

The coefficient of cubic expansion of dogfish liver oil, ratfish liver oil, salmon offal oil and halibut liver oil. By P.J. Frost, p. 43–44.

Notes. p. 34, 45, 46, 47.

Issue No. 64 (*October 1945*)

Summary account of Canadian pilchard tagging results. By John Lawson Hart, p. 51–52.

Agar-like gums and algin from British Columbia seaweeds. By Betty H. McKercher, p. 53–56.

Control of rancidity in stored fish. By H.L.A. Tarr, p. 57–61.

A new type herring tag detector. By Albert L. Tester, p. 62–63.

California soupfin shark captured in British Columbia. By R.E. Foerster, p. 64.

Notes. p. 61, 64.

Issue No. 65 (*December 1945*)

Examination of the unsaponifiable matter of marine animals oils. III. By Lyle A. Swain and Betty H. McKercher, p. 67–69.

A mortality in the fish life of Quamichan Lake, V.I. By Ferris Neave, p. 70–72.

The air-conditioned smokehouse. By E.P. Sidaway, p. 73–76.

Sockeye salmon tagging off the Skeena River in 1945. By A.L. Pritchard, p. 77–79.

Notes. p. 66, 72.

Issue No. 66 (*March 1946*)

Comparison of the Atlantic and Pacific herring fisheries. By Albert L. Tester, p. 4–8.

Taste appeal of kippers prepared from cold-stored and fresh British Columbia herring caught in different months. By A.W. Lantz, p. 9–11.

Lakes of the Skeena River drainage. I. Lakelse Lake. By J.R. Brett and A.L. Pritchard, p. 12–15.

Relationship between value and size of dogfish. By J.L. Hart, p. 16.

Control of rancidity in stored fish. II. By H.L.A. Tarr, p. 17–20.

Notes. p. 8, 20.

Issue No. 67 (*June 1946*)

Lakes of the Skeena River drainage. II. Morice Lake. By J.R. Brett and A.L. Pritchard, p. 23–26.

Insulation studies. I. By O.C. Young, p. 27–30.

Interesting movements as shown by the recoveries of certain species of tagged fish. By J.I. Manzer, p. 31.

Growth of herring along the upper east coast of Vancouver Island. By J.C. Stevenson, p. 32–35.

Germicidal ices. By H.L.A. Tarr, p. 36–40.

Notes. p. 35, 40.

Issue No. 68 (*September 1946*)

Oil and vitamin A contents of the livers of British Columbia flatfish. By Betty H. McKercher. p. 43–47.

Lemon sole spawning grounds in Baynes Sound. By F.H.C. Taylor, p. 48–50.

First year returns of lemon sole tags used off the west coast of Vancouver Island. By J.I. Manzer, p. 51.

Control of rancidity in stored fish. III. By H.L.A. Tarr, p. 52–54.

Lakes of the Skeena River drainage. III. Kitwanga Lake. By J.A. McConnell and J.R. Brett, p. 55–59.

Notes. p. 50.

Issue No. 69 (*December 1946*)

How frequently should butter clam beds be dug? By D.B. Quayle, p. 63–65.

The value of fish and fish products as protein foods. By Catherine P. Deas and H.L.A. Tarr, p. 66–69.

Lakes of the Skeena River drainage. IV. Kitsumgallum Lake. By J.R. Brett, p. 70–73.

Vitamin A in brill livers. By Lyle A. Swain and W.E. Barraclough, p. 74–76.

Notes. p. 65.

Issue No. 70 (*March 1947*)

Insulation studies. II. By O.C. Young and J.S.M. Harrison, p. 4–8.

Lakes of the Skeena River drainage. V. Bear Lake. By D.R. Foskett, p. 10–12.

Sockeye salmon tagging off the Skeena River in 1946. By A.L. Pritchard, p. 13–16.

A note on the cost of salmon bile. By Norman E. Cooke, p. 18–19.

Natural propagation of chum salmon in a coastal stream. By Ferris Neave, p. 20–21.

Notes. p. 17, 19, 22, 23.

Issue No. 71 (*June 1947*)

Notes on the albacore fishery. By J.L. Hart and H.J. Hollister, p. 3–4.

Is our fish waste being exploited fully? By Norman E. Cooke and Neal M. Carter, p. 5–10.

Vitamin A in brill livers. II. By W.E. Barraclough and Lyle A. Swain, p. 12–14.

Preservation of quality of edible fish products. By H.L.A. Tarr, p. 15–20.

White killer whale. By G. Clifford Carl, p. 20.

Notes. p. 4, 10, 11, 20.

Issue No. 72 (*August 1947*)

The rate of growth in lemon sole in the Strait of Georgia. By J.I. Manzer and F.H.C. Taylor, p. 24–27.

Lakes of the Skeena River drainage. VI. The lakes of the Upper Sustut River. By D.R. Foskett. p. 28–32.

Herring products. By A.W. Lantz, p. 33–35.

The harbour seals (*Phoca vitulina richardii*) on the Skeena River, B.C. By H.D. Fisher, p. 36–40.

Vitamin A in long-jaw flounder livers. By Lyle A. Swain and W.E. Barraclough, p. 41–42.

Notes. p. 27, 42, 43.

Issue No. 73 (*November 1947*)

Vitamin A loss in dogfish livers. By Lyle A. Swain, p. 48–49.

Amino acids in fishery products. By Catherine P. Deas and H.L.A. Tarr, p. 50–52.

An investigation into the destruction of grounds by otter trawling gear. By K.S. Ketchen. p. 55–56.

Vitamin A in dogfish livers. By Lyle A. Swain, p. 57.

Equipment for recovery of waste fish flesh. By A.W. Lantz, p. 58–62.

Preliminary survey of larval herring on the west coast of Vancouver Island, 1947. By J.C. Stevenson, p. 65–67.

Studies on lemon sole development and egg production. By K.S. Ketchen, p. 68–70.

A July spawning population of sand soles in Sydney Inlet. By J.I. Manzer, p. 70–71.

Notes. p. 53, 56, 67, 71.

Issue No. 74 (*March 1948*)

Experiments on the storage of frozen shrimps. By O.C. Young and D.H. Taylor, p. 3–5.

Lakes of the Skeena River drainage. VII. Morrison Lake. By V.H. McMahon, p. 6–9.

Lakes of the Skeena River drainage. VIII. Lakes of the Lac-da-dah Basin. By F.C. Withler. p. 9–12.

Lobsters and allied Crustacea: Distinguishing points. By J.S.T. Gibson. p. 13–17.

Probable cause of the browning of certain heat-processed fish products. By H.L.A. Tarr. p. 17–18.

Experiments on the canning of freshwater fish. By A.W. Lantz, p. 19–21.

Refrigerator car tests. V. By D.H. Taylor and J.S.M. Harrison, p. 23–25.

A note on new equipment for determination of water in fishery products. By Norman E. Cooke, p. 26–28.

Notes. p. 5, 22, 28.

Issue No. 75 (*July 1948*)

Smith Inlet sockeye. By J.G. Robertson, p. 31–34.

Experiments on the smoking of freshwater fish. By A.W. Lantz, p. 35–39.

Sockeye salmon tagging off the Skeena River in 1947. By A.L. Pritchard. p. 40–42.

The utilization of fish wastes. Bacteriological peptones from fish. By H.L.A. Tarr and C.P. Deas, p. 43–45.

The true picture of the 1947 Skeena River sockeye run. By D.J. Milne and A.L. Pritchard. p. 46–47.

Analyses of freshwater fishes from Canadian interior provinces. By P.J. Smith, p. 48–51.

The utilization of fish wastes. Commercial enzymes from the pyloric caeca of fish. By Norman E. Cooke and Niranjan K. Chowdhury, p. 51–54.

The hag-fish (*Polistotrema stoutii*) in British Columbia. By W.E. Barraclough, p. 57–58.

Notes. p. 47, 54, 55.

Issue No. 76 (*October 1948*)

A stability test for vitamin A in fish oil. By Lyle A. Swain, p. 63–65.

Pollution research in Alberni Inlet. By John P. Tully, p. 66–71.

Fresh water in Chatham Sound. By W.M. Cameron, p. 72–75.

An automatic smoke generator for smoking fish. By J.S.M. Harrison and S.W. Roach, p. 76–77.

Utilization of freshwater fish, trimmings and offal. By A.W. Lantz, p. 78–80.

Crab fishing off the Queen Charlotte Islands. By R.G. McMynn, p. 81–84.

The complete freezing of fish flesh. II. By V. Mahadevan and Neal M. Carter, p. 85–87.

Notes. p. 71, 84, 88.

Issue No. 77 (*December 1948*)

The decline of the soupfin shark fishery in British Columbia. By W.E. Barraclough, p. 91–94.

The inspection of whitefish flesh for parasitic worms. By G.E. McMurtrie and Neal M. Carter, p. 95–97.

Amino acids in fishery products. II. By Catherine P. Deas, Phyllis W. Ney, and H.L.A. Tarr, p. 97–99.

Refrigerator car experiments. VI. A mechanically refrigerated car. By O.C. Young, A.W. Lantz, and D.H. Taylor, p. 100–104.

Natural propagation of salmon in the central coastal area of British Columbia. By J.G. Hunter, p. 105–106.

Scorch and ignition temperatures of herring meal. By V. Mahadevan and Neal M. Carter, p. 106–107.

Canning of anchovies. By S.W. Roach and J.S.M. Harrison, p. 108–111.

A comparison of three different methods of determining water in fish meal. By Norman E. Cooke, p. 112–113.

A fish scaler adapted from equipment for recovery of flesh from fish trimmings. By A.W. Lantz, p. 114–115.

A stability test for vitamin A in fish oil. II. By Lyle A. Swain, p. 116–117.

An experimental model cooker for fish reduction. By A.W. Lantz. p. 118–119.

Issue No. 78 (*April 1949*)

How to tell the age of fish. By W. Percy Wickett and J.S.T. Gibson, p. 3–5.

Lakes of the Skeena River drainage. IX. Babine Lake. By F.C. Withler, J.A. McConnell, and V.H. McMahon, p. 6–10.

Effect of flesh acidity on bacterial numbers and trimethylamine in spoiling fish. By H.L.A. Tarr and Phyllis W. Ney, p. 11–13.

Notes on taking water temperatures. By H.J. Hollister, p. 14–16.

An air-conditioned tunnel for processing fish. II. By A.W. Lantz and O.C. Young, p. 17–20.

Refrigerator car experiments. VII. A road test with a mechanical car under heating conditions. By O.C. Young and D.H. Taylor, p. 21–24.

Notes. p. 10, 16, 20.

Issue No. 79 (*July 1949*)

Refrigerator car experiments. VIII. Road tests with a mechanical car under cooling conditions. By O.C. Young, p. 27–30.

Whaling investigation. By Gordon C. Pike, p. 30–31.

Herring oil for margarine. By Lyle A. Swain, p. 32.

Natural propagation of salmon in the central coastal area of British Columbia. II. The 1948 run. By J.C. Hunter, p. 33–34.

Food of fish of the cod family. By J.L. Hart, p. 35–36.

Animal protein factor in fish products. By Phyllis W. Ney and H.L.A. Tarr, p. 37–39.

Ultra-violet rays for detecting shell in picked crab meat. By S.W. Roach, p. 39.

Whale liver oil. By Lyle A. Swain, p. 40.

A shrimp sorting machine. By A.W. Lantz, p. 41–42.

Pressure cooling cannery retort system. By J.S.M. Harrison and S.W. Roach, p. 43–44.

Infra-red radiation in processing of fish products. By S.W. Roach and J.S.M. Harrison, p. 44.

Notes. p. 36, 42, 44.

Issue No. 80 (*October 1949*)

Utilization of fish waste. The economics of the separation of salmon offal. By Norman E. Cooke, p. 47–49.

Salmon tagging off the Skeena River in 1948. By D.J. Milne, p. 50–51.

Some observations concerning an unidentified growth factor for young trout and salmon. By Norman E. Cooke, Frank Pells, and Raymond C. Tomlinson, p. 52–54.

Sockeye fry production in a small British Columbia coastal watershed. By J.G. Robertson, p. 55–57.

The extent of herring spawning in British Columbia in 1949. By J.C. Stevenson, p. 57–59.

Author Index to Issues 61 to 80, p. 60–64.

Subject Index to Issues 61 to 80, p. 65–71.

Issue No. 81 (*December 1949*)

Daily sea water observations in Georgia Strait. By H.J. Hollister, p. 75–79.

The effect of mechanical washing of fish on the keeping quality of fillets prepared from them. By H.L.A. Tarr and A.W. Lantz, p. 80–83.

Canned oyster stew and oyster soup. By A.W. Lantz, p. 83.

Whale identification. By Gordon C. Pike, p. 84–86.

An air-conditioned tunnel for processing fish. III. A commercial conveyor-type vertical kiln. By A.W. Lantz, p. 87–90.

Occurrence of hybrid salmon in the British Columbia commercial fishery. By J.G. Hunter, p. 91–92.

Notes. p. 79, 86, 92.

Issue No. 82 (*April 1950*)

Shellfish poisoning. By Dorothy M. Furk, p. 3–5.

An apparatus for dipping fish fillets or steaks. By A.W. Lantz, p. 6–8.

The 1949 sockeye salmon runs to Rivers and Smith inlets, British Columbia. By A. Andrekson, p. 9–10.

Refrigerator car experiments. IX. Further road tests with a mechanical car. By O.C. Young, p. 11–14.

Egg content of Babine sockeye. By F.C. Withler, p. 16–17.

Differences between egg counts of sockeye salmon at Lakelse and Babine lakes. By K.V. Aro and G.C. Broadhead, p. 17–19.

Vitamin A. By Lyle A. Swain, p. 20–22.

Notes. p. 8, 10, 15, 19.

Issue No. 83 (*July 1950*)

Stomach contents of whales caught off the coast of British Columbia. By Gordon C. Pike. p. 27–28.

Assay of vitamin A in British Columbia whale liver oils. By P.J. Schmidt, p. 28–29.

The commercial shrimps of British Columbia. By T.H. Butler, p. 30–34.

Effect of several antibiotics and food preservatives in retarding bacterial spoilage of fish. By H.L.A. Tarr, B.A. Southcott, and H.M. Bissett, p. 35–38.

An anchovy gibbing machine. By J.S.M. Harrison and S.W. Roach, p. 40–41.

Fresh water in Georgia Strait. By R.J. Waldie, p. 42–44.

Time study on glazing fish. By A.W. Lantz, p. 45–48.

Notes. p. 38, 39, 44, 48.

Issue No. 84 (*October 1950*)

The preparation and application of brines and dipping solutions for processing certain fish products. By H.L.A. Tarr, A.W. Lantz, and Neal M. Carter, p. 51–57.

The destruction of eel grass by frost. By J.C. Stevenson, p. 58.

Oceanographic discovery. By R.J. Waldie, L.A.E. Doe, and associates, p. 59–63.

A study of the winter trawl fisheries at Cape Lazo and Nanoose Bay in the Strait of Georgia with special reference to the capture of ling cod. By K.S. Ketchen, p. 64–67.

"Chalky" halibut. By Basil E. Bailey, p. 68–69.

Tidal currents in Loudoun Channel. By L.A. Earlston Doe, p. 70–71.

Notes. p. 50, 58, 63.

Issue No. 85 (*December 1950*)

The migration of lemon soles in northern Hecate Strait. By K.S. Ketchen, p. 75–79.

The difference in the growth of coho salmon on the east and west coasts of Vancouver Island in 1950. By D.J. Milne, p. 80–82.

The nutritive value of fish meal and condensed fish solubles. By H.L.A. Tarr, B.A. Southcott, and H.M. Bissett, p. 83–85.

Machine for "scorching" fish meal. By J.S.M. Harrison, p. 86–87.

Seasonal cycles in the sea. By John P. Tully, p. 88–90.

Notes. p. 79, 82, 87, 90.

Issue No. 86 (*April 1951*)

Mechanical brining for salt herring. By J.S.M. Harrison and P.J. Schmidt, p. 3–5.

Daily sea water observations along the west coast of Vancouver Island. By H.J. Hollister, p. 6–11.

Growth in lemon sole in northern Hecate Strait. By J.I. Manzer, p. 13–15.

Canned salmon-cakes. By J.S.M. Harrison and S.W. Roach, p. 16.

Young salmon in the Nanaimo area. By D.R. Foskett, p. 18–19.

Refrigeration car experiments. X. Final report on the experimental mechanical car. By O.C. Young and E.G. Baker, p. 21–24.

Notes. p. 11, 12, 15, 16, 17–18, 20, 24.

Issue No. 87 (*June 1951*)

Fluctuations in the length and age composition of lemon soles and rock soles in northern Hecate Strait. By K.S. Ketchen, Ruth I. Peterson, and C.R. Forrester, p. 27–31.

Observations on the retention and spawning of the Pacific herring. By D.N. Outram, p. 32–33.

Crab processing. By A.W. Lantz, p. 34–36.

The return of sockeye salmon marked at Babine and Lakelse lakes. By K.V. Aro, p. 37–38.

Creel census studies at Lakelse Lake, Skeena River. By T.H. Bilton, p. 39–41.

The nutritive value of fish meal and condensed fish solubles. II. Effect of heat on herring meal. By H.L.A. Tarr, H.M. Bissett, B.A. Southcott, Jacob Biely, and B.E. March, p. 42–46.

Notes. p. 26, 31, 33, 41, 47–48.

Issue No. 88 (*October 1951*)

The separation of cholesterol from halibut liver oil. By Svava Kristjanson, p. 51–52.

Sea surface temperatures, 1950–51. By L.A.E. Doe, p. 53–56.

Freezing British Columbia fish at sea. By A.W. Lantz and Neal M. Carter, p. 57–60.

"Chalky" halibut. II. By Basil E. Bailey, p. 61.

Preliminary experiments to determine the working gape of trawling gear. By K.S. Ketchen, p. 62–65.

Utilization of freshwater fish, trimmings, and offal. By B.E. Bailey, A.W. Lantz, and P.J. Schmidt, p. 66–67.

Control of rancidity in stored fish. IV. By H.L.A. Tarr, B.A. Southcott, and H.M. Bissett, p. 67–69.

Efficiency of reproduction of pink salmon (*Oncorhynchus gorbuscha*) in the north central coastal area of British Columbia. By J.G. Hunter, p. 70–71.

Notes. p. 60, 65, 72.

Issue No. 89 (*December 1951*)

A jacketed display cabinet for controlling temperature and humidity to retain quality. By A.W. Lantz, p. 76–77.

The nutritive value of fish meal and condensed fish solubles. III. Effect of heating fat-containing and hexane-extracted meal. By Jacob Biely, B.E. March, and H.L.A. Tarr, p. 79–81.

Shrimp processing. By A.W. Lantz, p. 82–83.

The 1949 and 1950 tagging experiments in the Graham Island crab fishery. By T.H. Butler, p. 84–87.

The coho salmon population of Nile Creek. By W. Percy Wickett, p. 88–89.

Notes. p. 75, 77, 78, 87, 90.

Issue No. 90 (*March 1952*)

The Babine River salmon escapement in 1951. By K.V. Aro, p. 3–8.

The effect of the Babine slide on the 1951 sockeye run. By D.R. Foskett, p. 9.

The nutritive value of fish meal and condensed fish solubles. IV. A comparison of herring meals made by drying herring press cake commercially and experimentally at a lower temperature. By J. Biely, B.E. March, and H.L.A. Tarr, p. 10–13.

The nutritive value of fish meal and condensed fish solubles. V. The vitamin B_{12} content of herring meals. By H.L.A. Tarr, p. 14–15.

Climate in the coastal seas of British Columbia. By J.P. Tully, p. 16–20.

Some observations on olfactory perception in migrating adult coho and spring salmon. By J.R. Brett and D. MacKinnon, p. 21–23.

Notes. p. 8, 15.

Issue No. 91 (*June 1952*)

Daily seawater observations in northern British Columbia waters. By H.J. Hollister, p. 3–9.

The application of vacuum in pre-treatment of fish for canning. By J.S.M. Harrison and S.W. Roach, p. 10–12.

Sockeye reproduction in a tributary of Babine Lake, 1950–51. By F.C. Withler, p. 13–17.

Estimation of the size of the sockeye smolt run, Babine Lake, 1951. By F.C. Withler, p. 17–19.

Sockeye smolts from Babine Lake in 1951. By E. Dombroski, p. 21–26.

Commercial application of shrimp-sorting machine. Anon., p. 27.

The coho salmon run off the northern part of the west coast of Vancouver Island in 1951. By D.J. Milne, p. 28–30.

Notes. p. 20, 26.

Issue No. 92 (*October 1952*)

Analyses of British Columbia salt herring. By P.J. Schmidt, p. 3–5.

Project "Offshore," coastal temperatures, and tuna. By John P. Tully and E. Bertram Bennett, p. 6–9.

The nutritive value of fish meal and condensed fish solubles. VI. An unidentified growth factor(s) in fish meal. By Jacob Biely, B.E. March, and H.L.A. Tarr, p. 10–13.

Experiments using lights and bubbles to deflect migrating young spring salmon. By J.R. Brett and D. MacKinnon, p. 14–15.

Alcohol in a marine tube worm. By Ulf Fagerlund and Lyle A. Swain, p. 16–17.

The creel census of cut-throat trout at Lakelse Lake, 1952. By T.H. Bilton, p. 18–20.

Freezing British Columbia fish at sea. II. By A.W. Lantz, p. 21–22.

Cause of the browning of certain heat-processed fish products. By H.L.A. Tarr, p. 23–24.

Notes, p. 5, 9, 20.

Issue No. 93 (*December 1952*)

Fatty acid composition of fish oils. By Lyle A. Swain, p. 3–6.

Production of chum and pink salmon in a controlled stream. By W.P. Wickett, p. 7–9.

Insulation studies. III. By A.W. Lantz, p. 10–12.

Herring spawning along the British Columbia coast in 1952, and its implications on population abundance. By J.C. Stevenson and D.N. Outram, p. 13–16.

Fish meal from freshwater fish and fish processing wastes. By P.J. Schmidt and A.W. Lantz, p. 18–19.

A study of the role of fishery by-products on yeast growth. By Robert A. MacLeod, p. 20–22.

Stability of antibiotics when used in experimentally retarding fish spoilage. By H.M. Bissett and H.L.A. Tarr, p. 23–24.

A refrigerated display cabinet for fishery products. Anon., p. 25.

Oceanography of the Strait of Georgia. I. Salinity distribution. By M. Waldichuk, p. 26–29.

The seaward-migrating sockeye and coho salmon from Lakelse Lake, 1952. By R.E. Foerster, p. 30–32.

Notes. p. 2, 6, 17, 24, 29.

Issue No. 94 (*March 1953*)

Brine freezing of fish. By J.S.M. Harrison and S.W. Roach, p. 3–4.

Seasonal variation in exploitation of Skeena River sockeye salmon as indicated by tagged fish recoveries. By K.V. Aro, p. 5–7.

Daily seawater observations along the central British Columbia coast. By H.J. Hollister, p. 8–15.

The Stephenson collapsible crab trap. By T.H. Butler, p. 16–18.

Oceanography of the Strait of Georgia. II. Temperature distribution. By Michael Waldichuk, p. 19–23.

Fatty acid composition of fish oils. II. Herring oil. By Lyle A. Swain, p. 24–26.

The nutritive value of fish meal and condensed fish solubles. VII. Herring autolysates, fermentation products, condensed solubles and meal as supplements for chick starting rations. By H.L.A. Tarr, Jacob Biely, and B.E. March, p. 27–29.

The appearance of a new commercial shrimp in a newly developed shrimp fishery. By T.H. Butler, p. 30–31.

Notes. p. 7, 15, 23.

Issue No. 95 (*July 1953*)

Feeding habits of dogfish (*Squalus suckleyi* (Girard)). By B.M. Chatwin and R.C. Forrester, p. 35–38.

Use of chilled sea water in place of ice in transporting fish. By A.W. Lantz, p. 39–44.

Vitamin B_{12} in marine invertebrates and seaweeds. By B.A. Southcott and H.L.A. Tarr, p. 45–47.

How to predict tidal currents in Juan de Fuca Strait. By R.H. Herlinveaux, p. 48–51.

The isolation of *n*-octanol from a marine tube worm. By D.R. Idler and U.F.M. Fagerlund, p. 52.

Fluctuations in the hourly rate of migration of adult coho and spring salmon up the Stamp Falls fish ladder. By D. MacKinnon and J.R. Brett, p. 53–55.

Black discoloration on Nass River crabs. By D.R. Idler and R.A. MacLeod, p. 56–57.

Oceanography of the Strait of Georgia. III. Character of the bottom. By Michael Waldichuk. p. 59–63.

Notes. p. 47, 51, 58.

Issue No. 96 (*October 1953*)

Oceanography of British Columbia Mainland inlets. I. Water characteristics. By G.L. Pickard, p. 3–6.

Oceanography of the Strait of Georgia. IV. Dissolved oxygen distribution. By Michael Waldichuk, p. 6–10.

Studies on the nutrition and metabolism of marine bacteria. I. Isolation and identification of the micro-organisms and a preliminary survey of their nutritional requirements. By R.A. MacLeod, E. Onofrey, and M.E. Norris, p. 11–14.

The relationship of herring in inshore waters to the temperature and salinity of their environment. By A.S. Hourston, p. 15.

Cellulose digestion by rumen micro-organisms and its stimulation by fishery by-products. By R.A. MacLeod and C. Brumwell, p. 16–20.

Investigation of the source of an offensive odour in a shipment of gray cod. By J. Boyd. C. Brumwell, and R.A. MacLeod, p. 20–21.

The 1952–54 pink salmon cycle in the Queen Charlotte Islands. By Ferris Neave. J.G. Hunter. and W.P. Wickett, p. 22–24.

Aureomycin in experimental fish preservation. By John Boyd, C. Brumwell. and H.L.A. Tarr, p. 25–28.

Notes. p. 10, 28.

Issue No. 97 (*December 1953*)

The Pacific sea lamprey. By G.C. Pike, p. 3–5.

Steam-volatile fatty acids from a marine tube worm. By D.R. Idler and U.H.M. Fagerlund. p. 6–8.

Age and size of chum salmon from the Johnstone Strait area. By B.M. Chatwin, p. 9–10.

Iodine in fish oil. By Lyle A. Swain, p. 11.

Oceanography of British Columbia mainland inlets. II. Currents. By G.L. Pickard. p. 12–13.

Pollution study in Nanaimo Harbour. By Michael Waldichuk and John P. Tully, p. 14–17.

Studies on the nutrition and metabolism of marine bacteria. II. Some mineral requirements of marine bacteria. By R.A. MacLeod and E. Onofrey, p. 18–20.

The spawning population of herring in northern British Columbia in 1952. By A.S. Hourston, p. 21–26.

Buoyancy of submerged cellular plastic net float. By S.W. Roach and J.S.M. Harrison, p. 27–28.

Notes. p. 31, 32.

Issue No. 98 (*April 1954*)

Cause and control of the browning of heat-processed fish products. By H.L.A. Tarr and H.M. Bissett, p. 3–5.

What was the temperature of the sea water on the British Columbia coast in 1952? By H.J. Hollister, p. 6–9.

Further observations on olfactory perception in migrating adult coho and spring salmon—Properties of the repellent in mammalian skin. By D.F. Alderdice, J.R. Brett, D.R. Idler, and U. Fagerlund, p. 10–12.

Oceanography of British Columbia mainland inlets. III. Internal waves. By G.L. Pickard, p. 13–16.

Decline in availability of brill on the west coast of Vancouver Island as associated with a decline in recruitment. By W.E. Barraclough, p. 17–21.

Toxicity of amines for bacteria. By R.A. MacLeod and Eva Onofrey, p. 22–23.

Use of chilled sea water and dilute brines in place of ice for holding shrimp aboard a fishing vessel. By S.W. Roach and J.S.M. Harrison, p. 23–24.

Notes. p. 16, 21, 24.

Issue No. 99 (*July 1954*)

Food of the commercial crab in the Queen Charlotte Islands region. By T.H. Butler, p. 3–5.

Fatty acid composition of fish oils. III. Sockeye salmon offal oil. By Lyle A. Swain, p. 6–8.

Oceanography of British Columbia mainland inlets. IV. Dissolved oxygen distribution. By G.L. Pickard, p. 9–11.

The nutritive value of fish meal and condensed fish solubles. VIII. Interaction between unidentified factors in herring meal and in dehydrated green feed. By B.E. March, Jacob Biely, and H.L.A. Tarr, p. 12–13.

Growth of young lingcod. By B.M. Chatwin, p. 14–17.

A method of facilitating distribution of germicidal substances throughout ice blocks. By D.C. Gillespie, H.M. Bissett, J.W. Boyd, and H.L.A. Tarr, p. 18–19.

Measuring the oxygen supply to salmon redds. By W.P. Wickett and R.A. Pollard, p. 20–21.

Inhibition of mould development in fish products. By J.W. Boyd and H.L.A. Tarr, p. 22–23.

Trough experiments on guiding sockeye salmon fingerlings. By J.R. Brett, D. MacKinnon, and D.F. Alderdice, p. 24–27.

Tagging experiments on gray cod. By C.R. Forrester, p. 28–29.

The sizes of Babine Lake sockeye salmon smolt emigrants, 1950–1953. By E. Dombroski, p. 30–34.

Ambergris found in a British Columbia sperm whale. By Neal M. Carter and C.R. Elsey, p. 35–36.

Notes. p. 5, 13, 17, 29.

Issue No. 100 (*October 1954*)

Refrigerated sea water equipment for fish storage on salmon trollers. By J.S.M. Harrison and S.W. Roach, p. 3–5.

Water masses in Queen Charlotte Strait. By F.G. Barber, p. 6–7.

Oceanography of British Columbia mainland inlets. V. Salinity and temperature of waters of Bute Inlet. By Susumu Tabata, p. 8–11.

Aureomycin in experimental fish preservation. II. By D.C. Gillespie, H.M. Bissett, J.W. Boyd, and H.L.A. Tarr, p. 12–15.

Winter recaptures of tagged brill from deep water off the west coast of Vancouver Island. By W.E. Barraclough, p. 16–18.

Author and subject indexes to Progress Reports, issues 81–100 (December, 1949–October, 1954), p. 20–31.

Notes. p. 5, 7, 11, 15, 18, 19.

Issue No. 101 (*December 1954*)

Methods of shrimp and prawn prospecting. By T.H. Butler, p. 3–5.

The conversion of herring stickwater to solubles. I. The decomposition of stickwater at high temperatures. By W.A.B. Thompson, R.A. MacLeod, and D.R. Idler, p. 6–9.

The conversion of herring stickwater to solubles. II. Prevention of bacterial decomposition of herring stickwater at high temperatures. By W.A.B. Thomson, D.R. Idler, and R.A. MacLeod, p. 10–11.

Conditions for troll fishing. By John P. Tully, p. 12–16.

The sodium and potassium content of British Columbia sea foods. I. Salmon and tuna canned without added salt. By J.F. Murray, C.A. Brumwell, and R.A. MacLeod, p. 17–19.

The Hecate oceanographic project. By F.G. Barber and S. Tabata, p. 20–22.

Effect of pulp mill waste in Alberni Harbour. By Michael Waldichuk, p. 23–26.

The nutritive value of fish meal and condensed fish solubles. IX. Condensed herring solubles. condensed whale solubles and dried herring–whale solubles in chick rations. By Jacob Biely, B.E. March, and H.L.A. Tarr, p. 27–31.

Notes. p. 5, 16, 22, 26.

Issue No. 102 (*March 1955*)

Obituary—Doctor Guilford B. Reed. By J.R. Dymond, p. 3.

Effect of addition of aureomycin to sea water on the viable bacteria present in the viscera of living fish. By J.W. Boyd, H.M. Bissett, and H.L.A. Tarr, p. 4–5.

Effluent disposal from the proposed pulp mill at Crofton, B.C. By Michael Waldichuk, p. 6–9.

Trends in the gray cod fishery of Georgia Strait. By K.S. Ketchen, p. 10–13.

Further observations on the distribution of chlorotetracycline throughout ice blocks. By J.W. Boyd, H.M. Bissett, and H.L.A. Tarr, p. 14–15.

Age and size of Bella Coola sockeye salmon. By D.R. Foskett, p. 16–19.

Pacific oyster propagation in British Columbia. By D.B. Quayle, p. 20–22.

The "volatile reducing substances" test for fish freshness. By P.J. Schmidt and H.M. Mayoh, p. 22–23.

The salinity of sea water. By L.H. McCracken, p. 24–26.

Notes. p. 2, 5, 13, 15, 19, 27.

Issue No. 103 (*July 1955*)

Selectivity of trolling lures. By D.J. Milne, p. 3–5.

Results of tests on Kuralon staple twine. By P.J.G. Carrothers, p. 6–7.

Preliminary results of gray cod tagging in Georgia Strait in the winter of 1954–55. By C.R. Forrester and K.S. Ketchen, p. 8–10.

Vitamin A instability. By Lyle A. Swain and D.R. Idler, p. 11–13.

Transplantation of pink salmon into the Fraser Valley in a barren year. By F. Neave and W.P. Wickett, p. 14–15.

A soluble fertilizer from shrimp waste. By D.R. Idler and P.J. Schmidt, p. 16–17.

The nutritive value of fish meal and condensed fish solubles. X. The vitamin B_{12} content of herring stickwater and condensed solubles. By H.L.A. Tarr, p. 18.

Oceanography of British Columbia mainland inlets. VI. Plankton distribution. By R.J. LeBrasseur, p. 19–21.

Current observations in Hecate Strait. By F.G. Barber and A.W. Groll, p. 23–25.

Notes. p. 7, 22.

Issue No. 104 (*November 1955*)

Transport and storage of fish in refrigerated sea water: I. Refrigerated sea-water installation on the vessel *J.R.D.* By J.S.M. Harrison and S.W. Roach, p. 3–6.

Transport and storage of fish in refrigerated sea water: II. Bacterial spoilage of blue-back salmon in refrigerated sea water and in ice, with and without added chlortetracycline. By G. Steiner and H.L.A. Tarr, p. 7–8.

Transport and storage of fish in refrigerated sea water: III. Curd in canned salmon as related to post-mortem age of fish. By P.J. Schmidt and D.R. Idler, p. 9–10.

Migrations of the lemon sole (*Parophrys vetulus*) in the Strait of Georgia. By K.S. Ketchen and C.R. Forrester, p. 11–15.

Coho salmon fingerling attacked by young lamprey. By F.C. Withler, p. 15.

Transport and storage of fish in refrigerated sea water: IV. Preliminary report on nitrogen loss, weight changes, and proteolysis (belly-burn). By R. Barker and D.R. Idler, p. 16–18.

Transport and storage of fish in refrigerated sea water: V. Salt penetration. By J. McBride, J.F. Murray, and R.A. MacLeod, p. 19–22.

Cellulose digestion by rumen micro-organisms and its stimulation by fishery by-products: II. Preparation of an active washed inoculum and the development of a chemically defined fermentation medium. By J.F. Murray and R.A. MacLeod, p. 23–25.

Oceanographic conditions in Steveston Harbour during normal discharge of the Fraser River. By Susumu Tabata, p. 26–29.

Oceanography of the Strait of Georgia. V. Surface currents. By Michael Waldichuk and Susumu Tabata, p. 30–33.

Stream conditions and sockeye fry productions at Williams Creek, Lakelse Lake, B.C. By J.G. McDonald and M.P. Shepard, p. 34–37.

The sports fishery for cut-throat trout at Lakelse Lake, British Columbia. By T.H. Bilton and M.P. Shepard, p. 38–42.

Notes. p. 22.

Issue No. 105 (*February 1956*)

Growth of the British Columbia shipworm. By D.B. Quayle, p. 3–5.

Control of *post-mortem* bacterial spoilage of whales with chlortetracycline. By P.B. Crean, H.L.A. Tarr, and R.B. Barker, p. 6–10.

The relation of stock density to "milkiness" of lemon sole in Union Bay, B.C. By C.R. Forrester, p. 11.

Effect of chlortetracycline and storage temperatures on the quality of shucked oysters. By J.W. Boyd and H.L.A. Tarr, p. 12–13.

Seasonal temperature and salinity variations in Queen Charlotte Strait, B.C. By F.G. Barber. p. 14–15.

Project NorPac. By A.J. Dodimead, p. 16–18.

The sodium and potassium content of British Columbia sea foods. II. Some commercially important fresh fish. By J. McBride and R.A. MacLeod, p. 19–21.

Age and growth of lingcod (*Ophiodon elongatus*). By B.M. Chatwin. p. 22–26.

The conversion of herring stickwater to solubles. III. Preservative action of penicillin G on salmon offal stickwater under plant conditions. By W.A.B. Thomson, R.E.E. Jonas, R.A. MacLeod, and D.R. Idler, p. 27–30.

Notes. p. 26.

Issue No. 106 (*September 1956*)

Sea water intrusion in Steveston Cannery Basin. By Susumu Tabata, p. 3–6.

Storage of live crabs in refrigerated sea water. By S.W. Roach, p. 6–7.

Effect of chlortetracycline treatment of fish on development of certain food-poisoning bacteria. By H.M. Bluhm and H.L.A. Tarr, p. 8–10.

The mortality of small salmon when caught by trolling and tagged or released untagged. By D.J. Milne and E.A.R. Ball, p. 10–13.

Lakelse River experiments on guiding sockeye and coho salmon fingerlings. By J.R. Brett and D.F. Alderdice, p. 14–20.

Results of tests on Kuralon staple twine. By P.J.G. Carrothers, p. 20–23.

Distribution and movement of young Pacific salmon during early ocean residence. By J.I. Manzer, p. 24–28.

Issue No. 107 (*November 1956*)

Zooplankton distribution in the northeast Pacific Ocean. By R.J. LeBrasseur, p. 3–5.

Distribution of zooplankton in Dixon Entrance. By R.J. LeBrasseur, p. 5–7.

The raft culture of the Pacific oyster in British Columbia. By D.B. Quayle, p. 7–10.

North Pacific project—1956. Anon., p. 11.

Pacific weathership project. Anon., p. 12.

The effectiveness of various preservatives on plywood in preventing attack by shipworms and gribbles. By F.H.C. Taylor, p. 13–18.

Further results from tagging experiments on ling cod. By B.M. Chatwin, p. 19–21.

The distribution and abundance of early post-larval stages of the British Columbia commercial crab. By T.H. Butler, p. 22–23.

Oceanography of the Strait of Georgia. VI. Fresh-water budget. By Michael Waldichuk, p. 24–27.

Pacific salmon water? By John P. Tully and A.J. Dodimead, p. 28–32.

Notes. p. 27, 32.

Issue No. 108 (*September 1957*)

Oceanography of the Strait of Georgia. VII. Water masses. By Michael Waldichuk, p. 3–6.

On tidal currents and properties of the sea water along the British Columbia coast. By R.H. Herlinveaux, p. 7–9.

Application of refrigerated sea-water fish holding to a halibut fishing vessel. By J.S.M. Harrison and S.W. Roach, p. 10–14.

Observations of currents north of Triangle Island, B.C. By F.G. Barber, p. 15–18.

Heat exchange between sea and atmosphere along the northern British Columbia coast. By Susumu Tabata, p. 18–20.

Control of rancidity in stored fish. V. By J.W. Boyd, P.J. Schmidt, D.R. Idler, and H.L.A. Tarr, p. 21–23.

The nutritive value of fish meal and condensed fish solubles. XI. The protein nutritive value of fish meals of low and normal fat content. By B.E. March, Jacob Biely, and H.L.A. Tarr, p. 24–26.

Toxicity of sodium arsenite to young chum salmon. By D.F. Alderdice and J.R. Brett, p. 27–29.

Issue No. 109 (*November 1957*)

A "mass mortality" of fish in Alberni Harbour, B.C. By A.S. Hourston and R.H. Herlinveaux, p. 3–6.

Pomfret off the British Columbia coast. By W.F. Pinckard, p. 6–8.

Distribution, age and food of steelhead trout *Salmo gairdneri* caught in the northeast Pacific Ocean, 1956. By G.T. Taylor and R.J. LeBrasseur, p. 9–11.

Relative abundance of juvenile herring in the Strait of Georgia in 1955 and 1956. By A.S. Hourston, p. 12–13.

Control of *post-mortem* bacterial spoilage of whales with tetracycline antibiotics. By D.W. Duncan, J. Leung, N.A.W. LePage, J.W. Boyd, and H.L.A. Tarr, p. 14–15.

The tagging of the commercial crab in the Queen Charlotte Islands region. By T.H. Butler, p. 16–19.

Issue No. 110 (*April 1958*)

On the dissolved oxygen content of the waters of the Hecate region, B.C. By F.G. Barber, p. 3–5.

Summer oceanography in Osborn Bay, B.C. By Michael Waldichuk, p. 6–12.

Dogfish. By H.L.A. Tarr, p. 13–16.

Some recent experiments on preservation of fish with tetracycline antibiotics. By B.A. Southcott, R. Moyer, E.G. Baker, and H.L.A. Tarr, p. 16–18.

Issue No. 111 (*August 1958*)

Biological effects of the Ripple Rock explosion. By J.A. Thomson, p. 3–8.

The magnitude of herring spawn losses due to bird predation on the west coast of Vancouver Island. By D.N. Outram, p. 9–13.

The tagging of spring and coho salmon in the Strait of Georgia in 1956. By D.J. Milne and E.A.R. Ball, p. 14–18.

Adult returns of pink salmon from the 1954 Fraser River planting. By W. Percy Wickett, p. 18–19.

The recent rise in landings of whole fish for mink feed in British Columbia. By C.R. Forrester, p. 20–21.

Canadian ocean drift bottle recovered in Hawaii. By H.J. Hollister, p. 22.

A comparison of the nutritive value of condensed herring solubles prepared by acid and enzyme treatments. By B.E. March, Jacob Biely, J. McBride, R.A. MacLeod, and D.R. Idler, p. 23–28.

Issue No. 112 (*December 1958*)

Application of refrigerated sea water fish holding to a small combination fishing vessel. By S.W. Roach and J.S.M. Harrison, p. 3–6.

Food as a factor affecting the growth of coho salmon off the east and west coast of Vancouver Island, B.C. By A. Prakash and D.J. Milne, p. 7–9.

Shellfish toxicity and the weather in the Strait of Georgia during 1957. By Michael Waldichuk, p. 10–14.

Effect of chlortetracycline (CTC) antibiotic on the keeping quality of lingcod stored in refrigerated sea water. By E.G. Baker, B.A. Southcott, and H.L.A. Tarr, p. 15–17.

Food of the northern sea lion. By Gordon C. Pike, p. 18–20.

Distribution of chlortetracycline (CTC) antibiotic in ice made from hard waters. By R.H. Moyer, B.A. Southcott, and H.L.A. Tarr, p. 21–22.

Notes. p. 6, 20.

Issue No. 113 (*September 1959*)

The use of condensed herring solubles in turkey poult rations. By B.E. March, Jacob Biely, H.L.A. Tarr, and R.A. MacLeod, p. 3–5.

Observations on adult pink salmon behaviour. By W. Percy Wickett, p. 6–7.

Note on the behaviour of pink salmon fry. By W. Percy Wickett, p. 8–9.

The occurrence of lesser lancet fish (*Anotopterus pharao* Zugmayer) in the northeast Pacific Ocean. By G.T. Taylor, p. 10–12.

The primary productivity and fertility of the northeast Pacific and the British Columbia coastal waters. By J.D.H. Strickland, p. 13–15.

Damage to the Qualicum River stream bed by a flood in January 1958. By W. Percy Wickett, p. 16–17.

Vancouver Technological Station occupies new quarters. Anon., p. 19.

Issue No. 114 (*June 1962*)

Packaging air shipments of fresh fish. By F.G. Claggett, p. 3–5.

A new method for unloading fish. By S.W. Roach and J.S.M. Harrison, p. 7–8.

Abalones in British Columbia. By D.B. Quayle, p. 9–12.

Pollution in coastal waters of British Columbia. By Michael Waldichuk, p. 13–18.

Frozen albacore tuna. The influence of storage conditions prior to freezing. By N. Tomlinson, Shirley E. Geiger, and Eve Roberts, p. 19–21.

Author index to Issues 101–114, p. 23–27.

Subject index to Issues 101–114, p. 29–33.

The above Issue No. 114 concluded this series of Progress Reports of the Pacific Coast Stations.

6. CIRCULARS

(a) CIRCULARS [GENERAL SERIES] OF THE ARCTIC BIOLOGICAL STATION, STE. ANNE DE BELLEVUE, QUEBEC,

of the Fisheries Research Board of Canada
(formerly the Arctic Unit)

Abbreviation: CAG

1. The economics of seals in the eastern Canadian arctic. By I.A. McLaren, 94 p., November 1958.
2. The walrus in the Canadian Arctic. By A.W. Mansfield, 13 p., January 1959.
3. Aivit — Walrus. By A.W. Mansfield, 50 p., 1960. (In English and Eskimo.)
4. Studies on the sustainable catch of harp seals in the western North Atlantic. By D.E. Sergeant, 38 p., October 1959.
5. Harp seal populations in the western North Atlantic. By D.E. Sergeant and H.D. Fisher, 58 p., September 1960.
6. The netting of sea mammals. A report of the Belcher Islands experiment, 1960. By I.A. McLaren and A.W. Mansfield, 13 p., November 1960.
7. Whales and dolphins of the Canadian east coast. By D.E. Sergeant, 17 p., November 1961.
8. The biology and hunting of beluga or white whales in the Canadian Arctic. By D.E. Sergeant, 15 p., February 1962.

(A continuing series)

(b) CIRCULARS [GENERAL SERIES] OF THE BIOLOGICAL STATION, LONDON, ONT.

of the Fisheries Research Board of Canada
(formerly the Central Fisheries Research Station, Winnipeg, Man.;
relocated in Winnipeg in 1966 as the Freshwater Institute)

The first two issues of this series were titled "The Researcher," which carried short anonymous news items. Commencing with issue No. 3 the title was changed to "Circular." Each issue of the Circular series contains from three to six short articles, as listed.

Abbreviation: CCG

1. (The Researcher, No. 1) J.J. Keleher [ed.], 2 p., August 1957. Foreword. Tagging study. Size of trout and whitefish. Winter commercial fishery. Facts on Great Slave Lake.
2. (The Researcher, No. 2) J.J. Keleher [ed.], 5 p., August 1958. New research vessel for Great Slave Lake. Nylon thread favored for commercial nets. Staff — past and present. Boat survey planned. Chum salmon found in lake. Aid sought for winter fishery study. London Stations plan new publication. Productivity of Great Slave Lake.
3. 24 p., August 1961.
   The sea lamprey's position in the animal kingdom. By R.W. McCauley, p. 1–3.
   Lamprey fisheries, past and present, of North America and Europe. By M.L.H. Thomas, p. 4–7.
   Mackenzie Delta fish-processing pilot plant. By A.W. Lantz, p. 8–11.

Largest fish from Great Slave Lake. By J.J. Keleher, p. 12–16.
Counting fish. By G.F.M. Smith, p. 17–18.
The status of the commercial trout-rearing industry. By N.H.F. Watson, p. 19–21.
Literature for the fishing industry, p. 22–24.

4. 31 p., March 1962.
Scale reading — what, how and why. By W.A. Kennedy, p. 1–8.
A trout farm in the Black Forest, Germany. By R.W. McCauley, p. 9.
Specialty fish products. By A.W. Lantz, p. 10–28.
Literature for the fishing industry, p. 29–31.

5. 46 p., October 1962.
Proximate composition of some freshwater fish. By L.C. Dugal, p. 1–6.
The sea lamprey in the Great Lakes. By W.A. Kennedy, p. 7–20.
Chemical treatment, a technique designed to control sea lampreys. By B.H.G. Johnson and J.J. Tibbles, p. 21–43.
Literature for the fishing industry, p. 44–46.

6. 26 p., November 1963.
Great Slave Lake suckers. By J.J. Keleher, p. 1–4.
The longnose sucker in Great Slave Lake. By Roy H.D. Harris, p. 4–12.
Radioactive marking of fish. By D.P. Scott, p. 13–17.
Fresh whitefish sausage. By A.W. Lantz, p. 17–23.
Literature for the fishing industry, p. 24–26.

(A continuing series)

(c) CIRCULARS
OF THE FISH INSPECTION LABORATORY,

Canada Department of Fisheries, Halifax, N.S.

Although not a unit of the Fisheries Research Board, this Laboratory works closely with the Technological Stations of the Board and its Circulars contain information similar to that in some Board Circulars.

Abbreviation: CFI

1. Enamelled cans. By E. Hess, 1 p., February 3, 1945.
2. Routine samples. By E. Hess, 2 p., March 15, 1945. (Revised May 15. 1947.)
3. Exhausting — Vacuum. By E. Hess, 2 p., April 3, 1945.
4. Canning shad. By R.E.S. Homans, 3 p., revised February 26, 1946.
5. The removal of fish worms. By E. Hess, 3 p., August 26, 1945.
6. Canned kippered snacks (smoked fillets of herring). By R.E.S. Homans, 2 p., February 26. 1946.
7. Shellfish shucking plants. By E. Hess, 2 p., March 21, 1945.
8. "Home-made" cannery equipment. By E. Hess, 9 p., March 25, 1946.
9. Canning of cod livers. By E. Hess, 3 p., November 18, 1946.
10. The canning of Atlantic tuna. By E. Hess, 2 p., March 12, 1947.
11. Recommendations for improvement in shucking and handling of scallop meats. By E. Hess and W.J. Brownlee, 2 p., October 1, 1946.
12. Fish chowder. Anon., 1 p., April 21, 1947.
13. Sardine canning operations. By E. Hess, 2 p., April 21, 1947.
14. Canning mackerel fillets. By E. Hess, 3 p., revised May 16, 1947.

15. Canned fish cakes. By E. Hess, 2 p., April 28, 1947.
16. Tomato sauce in fish canning. By E. Hess and R.E.S. Homans, 4 p., June 28, 1948.
17. Clam shucking plants. By E. Hess and W.J. Brownlee, 2 p., August 6, 1948.
18. The canning of swordfish. By R.E.S. Homans, 2 p., August 2, 1949.
19. Lobster canning. By R.E.S. Homans, 12 p., October 27, 1949.
20. The preparation of marinated herring. By R.E.S. Homans, 3 p., February 8, 1950.
21. The preparation of lobster paste. By R.E.S. Homans, 4 p., February 28, 1950.
22. Plant sanitation. Anon., 7 p., July 5, 1950.
23. Canning mussels. By R.E.S. Homans, 4 p., November 2, 1950.
24. Canning clams. By R.E.S. Homans, 4 p., November 3, 1950.
25. Canning oysters. By R.E.S. Homans, 3 p., December 28, 1950.
26. Canning herring and gaspereau (alewives). Anon., 5 p., May 3, 1951.

(This series is now discontinued)

(d) CIRCULARS [GENERAL SERIES] OF THE TECHNOLOGICAL STATION, GRANDE-RIVIERE, QUE.,

of the Fisheries Research Board of Canada

Abbreviation: CGR

This short series of typewritten (as carbon copy) Circulars presented complete translations into French of two Board Bulletins, two Circulars of the Board's Technological Station at Halifax, and French-language original descriptions or adaptations of the results of certain other investigations by the Grande-Rivière and Halifax Technological Stations. Some issues of this series, though numbered in the series, were not identified by the word "Circular." None is dated, but No. 1–10 were issued prior to November 1938, and No. 11–13 soon after. Authorship is anonymous except for those translated directly from the English publication.

1. Traitement du poisson. Instructions relatives au salage et à l'empaquetage du maquereau saumuré. 11 p. (Translation of Bulletin No. 19.)
2. Traitement du poisson. Instructions relatives au salage et empaquetage du hareng saumuré selon la méthode Canadienne. 7 p. (Translation of Bulletin No. 52.)
3. La préparation de la morue sèche. 8 p. (The preparation of dried cod.)
4. L'entrepôsage de la morue verte et le sèchage de la morue salée. 5 p. (The storage of green salted cod and the drying of salted cod.)
5. Construction et opération du générateur de fumée "A." 4 p. (Translation of Halifax Station Old Series Circular No. 25.)
6. Construction et opération du fumoir modèle "B." 14 p. (Translation of Halifax Station Old Series Circular No. 26.)
7. Construction d'un fumoir à circulation naturelle. (Construction of a natural-circulation smokehouse.)
8. L'extraction de l'huile de foie morue. Nouveau procédé. 8 p. (Extraction of oil from cod livers by a new procedure.)
9. La préparation des conserves de homard. (Preparation of lobster paste.)
10. Protection de bois contre les vers. La proprete de l'atelier. Le bateau de pêche. 1 p.; 2 p.; 3 p. (Protection of wood against wood-borers. Plant sanitation. Fishing vessel construction for cleanliness.)

11. La préparation du hareng mariné. 3 p. (Preparation of marinated herring.)
12. La préparation de la morue désosée (boneless cod). 8 p. (The preparation of boneless cod.)
13. La préparation du filets frais et congélé. 6 p. (The preparation of fresh and frozen fillets.)

(This series is now discontinued)

(e) CIRCULARS [OLD SERIES] OF THE TECHNOLOGICAL STATION, HALIFAX, N.S.,

of the Fisheries Research Board of Canada

(formerly the Atlantic Fisheries Experimental Station)

Numbers 1,2,3,4, and 6 were called Bulletins when issued; No. 7–24 were called Lobster Canning Circulars; No. 5 and No. 25–37 were called Circulars; No. 38 and 39 were not specially identified when issued, but have subsequently been included in the series of Circulars. Numbers 27–33 also bear sub-series numbers. Number 34 was erroneously numbered 33 when multigraphed, and subsequently corrected.

Abbreviation: CHO

1. Announcement. By E. Hess, 2 p., March 5, 1935.
2. The lobster. By E. Hess, 2 p., March 13, 1935.
3. Handling and care of live lobsters. By E. Hess, March 20, 1935.
4. Fresh healthy fish and speedy packing necessary for quality canned lobsters. By E. Hess, March 27, 1935.
5. Preservation of lobster meat by canning. By E. Hess, 2 p., April 4, 1935.
6. Cooking the lobsters. By E. Hess, 2 p., April 11, 1935.
7. Shelling and washing the lobster meat. By E. Hess, 2 p., April 18, 1935.
8. Filling the lobster cans. By E. Hess, 3 p., April 25, 1935.
9. Exhausting the lobster cans. By E. Hess, 2 p., May 2, 1935.
10. Sealing the lobster cans. By E. Hess, 1 p., May 9, 1935.
11. "Processing" the lobster cans. By E. Hess, 3 p., May 15, 1935.
12. Cannery sanitation. By E. Hess, 2 p., May 22, 1935.
13. The preparation of lobster paste "tomalley." By E. Hess, 3 p., May 27, 1935.
14. Inspection and storage of canned lobster. By E. Hess, 2 p., June 5, 1935.
15. Spoilage of canned lobster. By E. Hess, 2 p., June 12, 1935.
16. Improvements in cannery equipment and cannery sanitation. By E. Hess, 3 p., March 25, 1940.
17. The proper method of packing lobster meat. By E. Hess, 5 p. and 2 plates, 1 in colour, April 4, 1940.
18. Shell pieces in canned lobster. By E. Hess, 1 p., April 28, 1941.
19. Proper method of weighing lobster meat. By E. Hess, 3 p., April 28, 1941.
20. "Brine" and "pickle." By E. Hess, 2 p., April 28, 1941.
21. Chilled lobster meat. By E. Hess, 2 p., April 30, 1941.
22. Embossing machine. By E. Hess, 1 p., April 10, 1942.
23. Soft lobster meat. By E. Hess, 2 p., May 7, 1942.
24. Crystals in canned lobster. By E. Hess, 4 p., May 19, 1942.

25. Construction and operation of smoke producer "A." By D. LeB. Cooper, 7 p., 1942.
26. Construction and operation of smoke house "B." By D. LeB. Cooper, 16 p., 1942.
27. Canned herring and gaspereau. By E. Hess, 4 p., April 22, 1944. (Fish Canning Series No. 1; revised.)
28. Canned mackerel (salmon-style). By E. Hess, 2 p., April 4, 1944. (Fish Canning Series No. 2; revised.)
29. A tunnel smoke house for the smoking of fish. By E.P. Linton and A.L. Wood, 4 p., March 1943. (Later revised as No. 35.)
30. Canning of chicken haddie. By E. Hess, 6 p., February 26, 1946. (Fish Canning Series No. 3; revised.)
31. Fish cannery planning. By E. Hess, 5 p., and 1 folded plan, September 1943. (Fish Canning Series No. 4; revised.)
32. Canning shellfish. By E. Hess, 2 p., April 30, 1944. (Fish Canning Series No. 5.)
33. Packing "fancy-grade" canned lobster. By E. Hess, 2 p., May 6, 1944. (Fish Canning Series No. 6.)
34. The preparation of "marinated herring." By E. Hess, 4 p., May 30, 1946.
35. Description and specifications for the A.F.E.S. Tunnel Type Smokehouse. By A.L. Wood, 6 p., March 1947. (Revised from No. 29.)
36. Putty fish. Its cause and prevention. By S.A. Beatty, 3 p., April 1947.
37. Maggots in smoked herring from Grand Manan. By S.A. Beatty, 1 p., June 1947.
38. The smoking of hard cured bloaters. Anon., 1 p., 1948.
39. The smoke curing of finnan haddies. Anon., 3 p., September 21, 1949.

(This series was discontinued and replaced by the new series that follows.)

(f) CIRCULARS [NEW SERIES] OF THE TECHNOLOGICAL STATION, HALIFAX, N.S.

of the Fisheries Research Board of Canada
(formerly the Atlantic Fisheries Experimental Station)

Abbreviation: CHN

1. A note to the fishing skippers regarding the factors that hasten deterioration of fish in boats at sea. By C.H. Castell, 6 p., June 1953.
2. Yellow discoloration in frozen lobster meat. By W.J. Dyer and D.C. Horne, 6 p., June 1953.
3. A convenient arrangement for the determination of trimethylamine in fillets. By P.L. Hoogland, 10 p., March 1956.
4. Determination of the salt content of fish. A simple apparatus and procedure. By P.L. Hoogland and H.C. Freeman, 11 p., April 1957.
5. A selected bibliography of salt cod. By M.E. McPhail, 30 p., June 1957.
6. A machine to slice cod fillets. By H.E. Power and H. Fougère, 6 p., October 1960.
7. A report to the fishing industry regarding blown oils. By P.M. Jangaard and R.G. Ackman, 1 p., April 19, 1962.
8. A report to the fishing industry on non-bacterial spoilage: Metal-catalysed off-odours. By C.H. Castell and N. Dambergs, 2 p., August 7, 1962.
9. A report to the fishing industry regarding lobster disease (Gaffkaemia). By James E. Stewart and Joan F. MacDonald, 2 p., August 8, 1962.

10. A report to the fishing industry on an improved method of producing fish protein concentrate. By H.E. Power, 2 p., September 21, 1962.

11. A report to the fishing industry and general public on the identification of ambergris. By R.G. Ackman and P.M. Jangaard, 2 p., November 21, 1962.

12. A report to the fishing industry on a method for the accelerated cooling of green, heavily salted fish. By A.L. Wood, 2 p., January 29, 1963.

13. A continuous flow, seawater aquarium suitable for experimental work with live marine animals. By James E. Stewart and H.E. Power, 7 p., March 30, 1963.

14. A report to the fishing industry on the significance of botulism in the Canadian fisheries. By C.H. Castell, 11 p., March 11, 1964.

15. A report to the fishing industry on the characteristics of fish protein concentrate made from various raw materials. By H.E. Power, 2 p., May 18, 1963. [Year should read 1964.]

16. A report to the fishing industry on the problem of excess moisture in fish. By H.E. Power, 3 p., May 26, 1964.

17. A report to the fishing industry regarding the tolerance of lobsters for fluoridated water and for various woods. By James E. Stewart and John W. Cornick, 2 p., May 19, 1964.

18. A report to the fishing industry on the use of radiation for the preservation of marine products. By H.E. Power, 2 p., May 18, 1964.

19. Fisheries by-products 1950–1963. A selected list of publications from the laboratories of the Fisheries Research Board of Canada. Compiled by R.G. Ackman and P.M. Jangaard, 7 p., September 3, 1964.

(A continuing series)

(g) CIRCULARS [GENERAL SERIES] OF THE BIOLOGICAL STATION, ST. JOHN'S, NFLD.

of the Fisheries Research Board of Canada

Numbers 1–3 of this series are called "Reports to Newfoundland Fishing Industry," but have subsequently been numbered as *Circulars*. Numbers 1–7 consist largely of material abstracted and compiled by the authors indicated, from summaries prepared by various members of the Station's staff for the Station's annual report covering the year indicated. Subsequent to issue No. 7 for the year 1959, such compilations were withdrawn from this *Circulars* series. Later compilations of this type were not issued as *Circulars*, but were issued annually as "Summary Report on Fishery Investigations and Groundfish Landings in Newfoundland." mainly for the fishing industry of Newfoundland, with very limited distribution.

Abbreviation: CJG

1. Summary report of the landings of groundfish in Newfoundland by all types of fishing boats during 1953. Compiled by A.M. Fleming, 9 p., July 1954.

2. 1. Summary report of groundfish investigations for 1954. 2. Landings and fishing effort of boats landing their catches in Newfoundland in 1954. Compiled by A.M. Fleming, 24 p., July 1955.

3. 1. Summary report of groundfish investigations for 1955. 2. Landings and fishing effort of boats landing their catches in Newfoundland in 1955. Compiled by A.M. Fleming, 58 p., July 1956.

4. 1. Summary report of groundfish investigations for 1956. 2. Groundfish landings in Newfoundland, 1956. Compiled by A.M. Fleming and M.E. Prouse, 25 p., August 1957.

5. Summary report on fishery investigations and groundfish landings in Newfoundland during 1957. Compiled by A.M. Fleming and Marjorie E. Prouse, 41 p., August 1958.

6. Summary report on fishery investigations and groundfish landings in Newfoundland during 1958. Compiled by A.M. Fleming, 27 p., September 1959.
7. Summary report on fishery investigations and groundfish landings in Newfoundland during 1959. Compiled by A.M. Fleming, 36 p., September 1960.
8. Summary report on fishery investigations and groundfish landings in Newfoundland during 1960. Anon., 20 p., September 1961.
9. Summary report on fishery investigations and groundfish landings in Newfoundland during 1961. Anon., 27 p., September 1962.
10. Fishery investigations and groundfish landings—Newfoundland 1962. Anon., 26 p., August 1963.
11. Fishery investigations and groundfish landings—Newfoundland 1963. A.M. Fleming [ed.], 42 p., July 1964.

(A continuing series)

(h) CIRCULARS [GENERAL SERIES] OF THE BIOLOGICAL STATION, NANAIMO, B.C.

of the Fisheries Research Board of Canada
(formerly the Pacific Biological Station)

Abbreviation: CNG

1. Herring catch statistics. Lower east coast sub-district. By A.L. Tester, 2 p. and 1 chart, October 1944. (With an Introduction by R.E. Foerster.)
2. Memorandum to the British Columbia fishing industry re commercial utilization of the slime flounder. By J.L. Hart, 1 p., October 30, 1944.
3. Recovery of herring scales. By A.L. Tester and J.C. Stevenson. 2 p., December 1944.
4. Common names for flatfish. By J.L. Hart, 2 p., February 23, 1945.
5. Herring catch statistics. West coast of Vancouver Island sub-district. By A.L. Tester, 1 p. and 1 chart, September 1945.
6. Prospects for the 1945–46 herring fishing season. By A.L. Tester and J.C. Stevenson, 2 p., September 1945.
7. Prospects for the 1946–47 herring fishing season. By A.L. Tester and J.C. Stevenson, 2 p., September 1946.
8. Prospects for the 1947–48 herring fishing season. By A.L. Tester and J.C. Stevenson, 2 p., September 1947.
9. Record herring catch does not greatly decrease west coast of Vancouver Island spawning. By A.L. Tester and J.C. Stevenson, 6 p., October 1947.
10. Herring schools in Baynes Sound. By A.L. Tester, 1 p., December 10, 1947.
11. The pilchard situation. By J.L. Hart, 2 p., January 24, 1948.
12. Accumulated data on albacore (*Thunnus alalunga*). May 10, 1948.
    Foreword. By J.L. Hart, 2 p.
    Food of albacore. By J.L. Hart and W.E. Barraclough, 2 p.
    Sizes of albacore landed in British Columbia. By J.L. Hart and G.C. Pike, 2 p.
    Albacore log records. By Winona Bethune, 6 p.
13. Prediction of salmon runs. By F. Neave and W.P. Wickett, 2 p., May 11, 1948.
14. Prospects for the 1948 salmon catch on the Skeena River. By D.J. Milne and A.L. Pritchard, 2 p., May 1948.
15. Prospects for the 1948–49 herring fishing season. By J.C. Stevenson, 2 p., September 1948.

16. Scouting for herring along the east coast of Queen Charlotte Islands, March 1949. By J.C. Stevenson, 4 p., April 1949.

17. Report on the investigation of albacore (*Thunnus alalunga*). May 6, 1949.

Foreword. By J.L. Hart, 1 p.

General description of scouting operations and fishing experiments. By R.F. Scagel, 3 p.

Temperature conditions in relation to albacore occurrence and catches. By R.F. Scagel, 5 p.

Albacore log records. By Winona Bethune, 4 p.

Other oceanographic conditions in relation to occurrence and catch of albacore. By R.F. Scagel, 3 p.

Feeding of albacore. By R.F. Scagel, 2 p.

The lengths of albacore in the commercial catch. By J.L. Hart, 2 p.

Tagging and age studies on albacore. By R.F. Scagel, 2 p.

Body temperatures (rectal) of albacore. By R.F. Scagel, 1 p.

Summary of reports of tuna fishing gear experiments carried out by officers of the Department of Fisheries from the fisheries protection vessels "Laurier" and "Kitimat" during tuna patrols and surveys, 1948. By A.J. Touchings, 3 p.

18. The mortality of herring at Mud Bay, March 1949. By J.C. Stevenson, 3 p., August 1949.

19. Prospects for the 1949–50 herring fishing season. By J.C. Stevenson, 3 p., September 1949.

20. A report on the 1949 albacore fishery (*Thunnus alalunga*). By J.M. Partlo, 37 p., June 26, 1950.

21. Prospects for the 1950–51 herring fishing season. By J.C. Stevenson, 4 p., August 1950.

22. Prospects for the pilchard fishery. By J.L. Hart, 2 p., December 1950.

23. A report on the 1950 albacore fishery of British Columbia (*Thunnus alalunga*). By J.M. Partlo, 15 p., June 29, 1951.

24. Prospects for the 1951–52 herring fishing season. By J.C. Stevenson, 7 p., September 1951.

25. Prospects for the 1952–53 herring fishing season. By J.C. Stevenson, 7 p., October 1952.

26. Estimation of herring population size by means of echo-sounder tracings and its application to herring research. By A.S. Hourston, 32 p., February 1953. (With a Foreword by J.L. Hart.)

27. The implications of the absence of the 1952–53 herring fishery on herring research. By J.C. Stevenson, 23 p., February 1953. (With a Foreword by J.L. Hart).

28. A shrimp survey by the "Investigator No. 1," April 1953. By T.H. Butler, 6 p., May 1953.

29. Prospects for the 1953–54 herring fishing season. By J.C. Stevenson, 6 p., October 3, 1953.

30. Investigation of the Skidegate Inlet and Hecate Strait butter sole stocks in 1953. By B.M. Chatwin, 5 p., December 30, 1953.

31. Shrimp prospecting in regions of the British Columbia coast, November 1953 to March 1954. By T.H. Butler and J.E.H. [H.E.J. on original] Légaré, 42 p., April 1954.

32. Guide to the whales, porpoises and dolphins of the north-east Pacific and arctic waters of Canada and Alaska. By G.C. Pike, 13 p., 1954. **32R.** Revised edition, 14 p., August 1956.

33. A report on the yield of the otter-trawl and hand-line fisheries of Georgia Strait in the fall and winter of 1952–53 and 1953–54. By K.S. Ketchen, 19 p., August 3, 1954.

34. Prospects for the 1954–55 herring fishing season. By F.H.C. Taylor, 8 p., September 27, 1954.

35. Shrimp and prawn prospecting on the British Columbia coast, June to December 1954. By T.H. Butler and G.V. Dubokovic, 92 p., February 1955.

36. Progress report on the development of the British Columbia mid-water trawl for herring. By W.E. Barraclough and W.W. Johnson, 37 p., March 31, 1955.

37. Extent of herring spawning in British Columbia waters during 1955. By D.N. Outram, 10 p., July 1955.

38. Prospects for the 1955–56 herring fishing season. By F.H.C. Taylor, 9 p., July 1955.

39. Shrimp prospecting in the offshore region of the British Columbia coast, June to August, 1955. By T.H. Butler and G.V. Dubokovic, 23 p., November 1955.

40. The development of the Pacific herring egg and its use in estimating age of spawn. By D.N. Outram, 11 p., December 1955.

41. The otter trawl fishery in the Strait of Georgia during the fall and winter of 1954–55. By K.S. Ketchen, 9 p., December 1955.

42. Amount of herring spawn deposited in British Columbia coastal waters in 1956. By D.N. Outram, 13 p., August 1956.

43. Prospects for the 1956–57 herring fishing season. By F.H.C. Taylor, 9 p., August 1956.

44. Guide to marine vegetation encountered during herring spawn surveys in southern British Columbia. By D.N. Outram, 18 p., December 1957.

45. Prospects for the 1957–58 herring fishing season. By F.H.C. Taylor, 7 p., July 1957.

46. Extent of herring spawning in British Columbia in 1957. By D.N. Outram, 12 p., October 1957.

47. Index and list of titles for the Circulars and Industrial Memoranda issued by the Stations and Units of the Fisheries Research Board of Canada, 1935–1957. Compiled by N.M. Carter and W.E. Ricker, 50 p., February 1958.

48. A method of determining the depth of midwater trawl nets. By W.E. Barraclough, 6 p., August 1958.

49. Prospects for the 1958–59 herring fishing season. By F.H.C. Taylor, 8 p., July 1958.

50. The 1958 herring spawn deposition in British Columbia coastal waters. By D.N. Outram, 13 p., September 1958.

51. A comparison between Canadian, British and Japanese nylon gill-net twines. By P.J.G. Carrothers, 14 p., February 1959.

52. Sampling of 1958 B.C. salmon catches and escapements for age and sex composition. By T.H. Bilton, M.P. Shepard, and D.L. Jenkinson, 6 p., May 1959.

53. Prospects for the 1959–60 British Columbia herring fishing season. By F.H.C. Taylor, 4 p., October 1959.

54. Monofilament nylon web for salmon gill nets—1959. By P.J.G. Carrothers, 4 p., October 1959.

55. Results of shrimp trawling by *Investigator No. 1,* June 1959. By T.H. Butler, 7 p., November 1959.

56. The extent of the 1959 herring spawning in British Columbia coastal waters. By D.N. Outram, 13 p., November 1959.

57. Pulp mill pollution in British Columbia. By Michael Waldichuk, 18 p., June 1960.

58. List of titles and publications of the Fisheries Research Board of Canada 1955–1960. Prepared by R.L. MacIntyre, 94 p., March 1961.

59. Sedimentation of radioactive wastes in the sea. By Michael Waldichuk, 39 p., January 1961.

60. The propagation of herring (*Clupea pallasii*) in the coastal waters of British Columbia, with a summary of spawning success in 1960. By D.N. Outram, 23 p., January 1961.

61. Trawl mesh regulation in the Strait of Georgia. By K.S. Ketchen, 16 p., February 1961.

62. Preliminary results of grey cod tagging in Hecate Strait, in 1960 and 1961. By J.A. Thomson, 8 p., July 1961.

63. The multitudinous Pacific herring. By D.N. Outram, 15 p., December 1961.

64. Productive capacity of Canadian fisheries. Compiled by W.E. Ricker, 79 p., June 1962.

65. Russian–English glossary of names of aquatic organisms and other biological and related terms. Compiled by W.E. Ricker, 173 p., August 1962.

66. Results of laboratory and field evaluation of continuous filament isotactic polypropylene fibre for salmon gill nets. By P.J.G. Carrothers, 16 p., July 1962.

67. An improved prawn trap. By T.H. Butler, 7 p., February 25, 1963.

68. Whales and dolphins of the west coast of Canada. By G.C. Pike and L. Giovando, 31 p., March 14, 1963.

69. The extent of herring spawning in British Columbia in 1962. By D.N. Outram, 19 p., December 1963.

70. The extent of herring spawning in British Columbia in 1963. By D.N. Outram, 12 p., December 1963.

71. The 1961 herring spawn deposition in British Columbia coastal waters. By D.N. Outram, 12 p., December 1963.

72. The abundance of herring spawn in the coastal waters of British Columbia in 1964. By D.N. Outram, 4 p., December 1964.

(A continuing series)

(i) CIRCULARS [STATISTICAL SERIES] OF THE BIOLOGICAL STATION, NANAIMO, B.C.

of the Fisheries Research Board of Canada

Abbreviation: CNS

1. British Columbian landings of trawl-caught groundfish by month, by major statistical area. Vol. 1, 1945–1949. By J.A. Thomson and A.N. Yates, 68 p., December 1960.

2. British Columbian landings of trawl-caught groundfish by month, by major statistical area. Vol. 2, 1950–1954. By J.A. Thomson and A.N. Yates, 53 p., January 1961.

3. British Columbian landings of trawl-caught groundfish by month, by major statistical area. Vol. 3, 1955–1959. By J.A. Thomson and A.N. Yates, 91 p., February 1961.

4. British Columbia landings of trawl-caught groundfish by month, by minor statistical area. Vol. 4, 1945–1947. By J.A. Thomson and A.N. Yates, 135 p., October 1961.

5. British Columbia landings of trawl-caught groundfish by month, by minor statistical area. Vol. 5, 1948–1950. By J.A. Thomson and A.N. Yates, 131 p., November 1961.

6. British Columbia landings of trawl-caught groundfish by month, by minor statistical area. Vol. 6, 1951–1953. By J.A. Thomson and A.N. Yates, 138 p., January 1962.

7. British Columbia landings of trawl-caught groundfish by month, by minor statistical area. Vol. 7, 1954–1956. By J.A. Thomson and A.N. Yates, 135 p., February 1962.

8. British Columbia landings of trawl-caught groundfish by month, by minor statistical area. Vol. 8, 1957–1959. By J.A. Thomson and A.N. Yates, 147 p., February 1962.

9. British Cloumbia landings of trawl-caught groundfish by month, by major and minor statistical area. Vol. 9, 1960. By J.A. Thomson and A.N. Yates, 73 p., July 1961.

10. British Columbia landings of trawl-caught groundfish by month, by major and minor statistical area. Vol. 10, 1961. By J.A. Thomson and A.N. Yates, 77 p., October 1962.

11. British Columbia landings of trawl-caught groundfish by month, by major and minor statistical area. Vol. 11, 1962. By J.A. Thomson and E.J.R. Lippa, 75 p., April 1963.

12. Summary of total effort and catch by the trawl fishery along the west coast of the United States and Canada, 1959–1961. By J.A. Thomson, 25 p., June 1963.

13. British Columbia landings of trawl-caught groundfish by month, by major and minor statistical area. Vol. 12, 1963. By J.A. Thomson and E.J.R. Lippa, 71 p., April 1964.

(A continuing series)

(j) CIRCULARS [OYSTER FARMING SERIES] OF THE BIOLOGICAL STATION, ST. ANDREWS, N.B.

of the Fisheries Research Board of Canada
(formerly the Atlantic Biological Station)

Abbreviation: COF

1. Cheap protection for wood against shipworms. By A.W.H. Needler, 2 p., 1938.

2. Cheaper floating trays for rearing separate oyster spat. By A.W.H. Needler, 3 p., 1938.

3. Preparation of concrete-coated cardboard spat collectors. By A.W.H. Needler, 3 p., 1938.

4. How do oysters land on the bottom under water? By A.W.H. Needler, 1 p., 1938.

5. The capacity of an acre. By A.W.H. Needler, 2 p., 1938.

6. Starfish—the oyster's enemy in our waters. By A.W.H. Needler, 2 p., 1939.

7. How to avoid damage caused by starfish. By A.W.H. Needler, 2 p., 1939.

8. When to put materials in the water to catch spat. By A.W.H. Needler, 2 p., 1939.

9. Hang collectors at various levels to avoid overcrowding on floats. By A.W.H. Needler, 1 p., 1939.

10. The oyster drill—a serious enemy in some areas. By A.W.H. Needler, 2 p., 1940.

11. Use of quicklime for killing starfish on oyster grounds. By A.W.H. Needler, 2 p., 1940.

12. A machine for separating spat from cardboard collectors. By A.W.H. Needler, 1 p., 1940.

13. Packing and grading oysters in the shell. By A.W.H. Needler, 2 p., 1941.

14. A new bulletin for oyster farmers. By A.W.H. Needler, 1 p., 1941.

15. Oysters fished early do not store well. By A.W.H. Needler, 1 p., 1942.

16. The spat failure in 1941. By C.J. Kerswill, 2 p., 1943.

17. Need for production of seed oysters at Shippegan. By J.C. Medcof, 1 p., 1943.

18. Better spat collection by proper handling of collectors. By C.J. Kerswill, 2 p., 1943.

19. Further improvement needed in packing and grading oysters. By C.J. Kerswill, 3 p., 1945.

(This series is now discontinued)

(k) CIRCULARS OF THE PACIFIC OCEANOGRAPHIC GROUP, BIOLOGICAL STATION, NANAIMO, B.C.

of the Fisheries Research Board of Canada

The first 17 issues bore the designations "Bulletin 5801" to "Bulletin 5812," and "Bulletin 5901" to "Bulletin 5905," to indicate the 12 issues during 1958 and the first 5 issues during 1959. The designation was then altered to "Circular" and the numbering system altered to indicate more clearly the year and issue number within that year, e.g. "Circular 1959–6."

Abbreviation: CPO

5801. [i.e. **1958–1.**] Observations at ocean weather station "PAPA." Cruise P-58-1, March 5 to April 21, 1958. By C.D. McAllister, 9 p., July 31, 1958.

5802. Observations at ocean weather station "PAPA." Cruise P-58-2, May 28 to July 10, 1958. By Susumu Tabata, 13 p., July 31, 1958.

5803. Weekly radio broadcast of daily seawater temperatures. By H.J. Hollister, 5 p., August 15, 1958.

5804. Observations at ocean weather station "PAPA." C.G.S. *Stonetown*. July 8 to August 25, 1958. By Susumu Tabata, 4 p., August 29, 1958.

5805. Monthly review of daily seawater temperatures, August 1958. By H.J. Hollister, 3 p., September 15, 1958.

5806. Oceanographic observations in the northeast Pacific Ocean, March 11 to April 10, 1958. By A.J. Dodimead, 9 p., (not dated). [April 25, 1958.]

5807. Oceanographic observations in the northeast Pacific Ocean, July 22 to August 16, 1958, in H.M.C.S. *Oshawa*. By F.G. Barber, 7 p., October 9, 1958.

5808. Oceanographic observations in the vicinity of the Aleutian Islands. By A.J. Dodimead, 7 p., October 9, 1958.

5809. Monthly review of daily seawater temperatures, September 1958. By H.J. Hollister, 4 p., October 10, 1958.

5810. Oceanographic observations at ocean weather station "P," C.G.S. *St. Catharines*. Cruise P-58-3, August 19 to September 29, 1958. By S. Tabata and D.G. Robertson, 11 p., October 27, 1958.

5811. Monthly review of daily seawater temperatures, October 1958. By H.J. Hollister, 5 p., November 5, 1958.

5812. Monthly review of daily seawater temperatures, November 1958. By H.J. Hollister, 5 p., December 9, 1958.

5901. Coastal seaways cruise in C.N.A.V. *Whitethroat*, November 12 to December 5, 1958. By R.H. Herlinveaux, 6 p., January 8, 1959.

5902. Monthly review of daily seawater temperatures, December 1958. By H.J. Hollister, 4 p., January 9, 1959.

5903. Oceanographic observations at ocean weather station "P," C.G.S. *St. Catharines*. Cruise P-58-4, October 28–December 15, 1958. By C.D. McAllister, 14 p., January 21, 1959.

5904. Oceanographic conditions in the Canadian approaches, January 16 to 28, 1958. By J.P. Tully, 4 p., February 2, 1959.

5905. Monthly review of daily seawater temperatures, January 1959. By H.J. Hollister. 4 p., February 5, 1959.

1959–6. Northeast Pacific oceanographic cruise in C.N.A.V. *Oshawa*, January 19 to February 16, 1959. By A.J. Dodimead, 6 p. (not dated). [February 26, 1959.]

1959–7. Monthly review of daily seawater temperature reports, February 1959. By H.J. Hollister, 4 p., March 20, 1959.

1959–8. Monthly review of daily seawater temperature reports, March 1959. By H.J. Hollister, 5 p., April 7, 1959.

1959–9. Oceanographic observations at ocean station "P." By S. Tabata. 14 p., April 8. 1959.

1959–10. Oceanographic conditions in the approaches to the Canadian Pacific coast. April 1959. By A.J. Dodimead and R.H. Herlinveaux, 4 p. (not dated). [April 29. 1959.]

1959–11. Oceanographic conditions along line from "Swiftsure" lightship to ocean station "P." By S. Tabata and D.G. Robertson, 4 p., April 24, 1959.

1959–12. Monthly review of daily seawater temperature reports for April 1959. By H.J. Hollister, 6 p., May 6, 1959.

1959–13. Coastal seaways cruise in C.N.A.V. *Oshawa*, cruise CS-59-1. March 31–April 22. 1959. By R.H. Herlinveaux, 6 p., May 13, 1959.

1959–14. Monthly review of daily seawater temperatures for May 1959. By H.J. Hollister. 5 p., June 8, 1959.

1959–15. Oceanographic observations from weathership C.G.S. *St. Catharines*. April 14–June 1. 1959. By C.D. McAllister. S. Tabata. D.G. Robertson. and K. Booth. 12 p. (not dated). [June 12, 1959.]

1959–16. Monthly review of daily seawater temperatures. June 1959. By H.J. Hollister. 5 p.. July 10. 1959.

1959–17. Oceanographic conditions in the approaches to the Canadian Pacific coast, June 1959. By R.H. Herlinveaux and C.D. McAllister, 4 p., July 13, 1959.

1959–18. Coastal seaways cruise in C.N.A.V. *Oshawa*, CS-59-2, June 8–July 1, 1959. By R.H. Herlinveaux, 6 p., July 22, 1959.

1959–19. Monthly review of daily seawater temperatures, July 1959. By H.J. Hollister, 5 p., August 5, 1959.

1959–20. Primary productivity and fertility observations at ocean weather station "P." C.G.S. *St. Catharines* cruise P-59-3, July 7–August 24, 1959. By C.D. McAllister, T. R. Parsons, and J.H.D. Strickland. 5 p., September 11, 1959

1959–21. Oceanographic investigations from weathership C.G.S. *St. Catharines*, cruise P-59-3, July 7–August 24, 1959. By C.D. McAllister, 10 p., September 11, 1959.

1959–22. Monthly review of daily seawater temperature reports for August 1959. By R.H. Herlinveaux, 5 p., September 14, 1959.

1959–23. Northeast Pacific oceanographic survey, August 3 to September 1, 1959. By A.J. Dodimead and N.P. Fofonoff, 7 p., September 3, 1959.

1959–24. Oceanographic conditions at stations between "Swiftsure" lightship and ocean station "P." By L. Giovando, 3 p., October 7, 1959.

1959–25. Review of daily seawater temperature reports for September 1959. By H.J. Hollister, 4 p., October 9, 1959.

1959–26. Review of daily seawater temperature reports for October 1959. By H.J. Hollister, 4 p., November 5, 1959.

1959–27. Oceanographic conditions along line from "Swiftsure" lightship to ocean station "P." By S. Tabata and D.G. Robertson, 4 p., November 25, 1959.

1959–28. Daily seawater temperatures in November 1959 for B.C. coastal waters. By H.J. Hollister, 5 p., December 9, 1959.

1959–29. Coastal seaways cruise in C.N.A.V. *Oshawa*, CS-59-3, November 16–December 13, 1959. By R.H. Herlinveaux, 5 p., December 19, 1959.

1959–30. Daily seawater temperatures in December 1959 for B.C. coastal waters. By H.J. Hollister, 4 p., January 7, 1960.

1960–1. Daily seawater temperatures for January 1960 in B.C. coastal waters. By H.J. Hollister, 4 p., February 11, 1960.

1960–2. Some miscellaneous information on the conductivity salinometers at P.O.G., Nanaimo, B.C. By K.V. Stephens, 2 p., February 11, 1960.

1960–3. Oceanographic observations from weathership C.G.S. *St. Catharines*, cruise P-59-5, December 8, 1959–January 25, 1960. By R.L. Johnston and S. Tabata, 11 p., February 25, 1960.

1960–4. Northeast Pacific oceanographic survey, January 11 to February 10, 1960. By A.J. Dodimead, 8 p., March 10, 1960.

1960–5. Occurrence of zooplankton in the eastern sub-arctic Pacific Ocean during 1957. By O.D. Kennedy, 8 p., March 10, 1960.

1960–6. Daily seawater temperatures for February 1960 in B.C. coastal waters. By H.J. Hollister, 5 p., March 15, 1960.

1960–7. Coastal observations from northeast Pacific survey, January 11 to February 10, 1960. By R.K. Lane, 6 p., March 17, 1960.

1960–8. Oceanographic conditions between "Swiftsure" lightship and ocean station "P." By S. Tabata and C.D. McAllister, 3 p., March 25, 1960.

1960–9. Oceanographic observations from a helicopter. By R.H. Herlinveaux, 5 p., April 7, 1960.

1960–10. B.C. coastal seawater temperatures for March 1960. By H.J. Hollister, 4 p., April 12, 1960.

1960–11. Oceanographic observations from weathership C.G.S. *St. Catharines*, cruise P-60-1, March 1–April 18, 1960. By C.D. McAllister, 10 p., May 2, 1960.

1960–12. B.C. coastal seawater temperatures for April 1960. By H.J. Hollister, 3 p., May 30, 1960.

1960–13. Oceanographic conditions between "Swiftsure" lightship and station "P." C.D. McAllister, S. Tabata, and K. Ferrier, 2 p., June 7, 1960.

1960–14. B.C. coastal seawater temperatures for May 1960. By H.J. Hollister, 4 p., June 14, 1960.

1960–15. Proposed oceanographic survey of the northeast Pacific Ocean, July 28–September 11, 1960. By A.J. Dodimead, 4 p., June 22, 1960.

1960–16. Coastal survey off Vancouver Island, May 3–14, 1960. By R.K. Lane, 21 p., July 4, 1960.

1960–17. Progress report—Hecate model. By N.E.J. Boston, 4 p., June 30, 1960.

1960–18. B.C. coastal seawater temperatures for June 1960. By H.J. Hollister, 4 p., July 13, 1960.

1960–19. Outlook—Surface seawater temperatures off British Columbia. By J.P. Tully, A.J. Dodimead, and H.J. Hollister, 4 p., July 14, 1960.

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1960–23. Sea temperatures between "Swiftsure" lightship and station "P." By S. Tabata, D.G. Robertson, and J. Butters, 2 p., August 11, 1960.

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1960–26. B.C. coastal seawater temperatures for September 1960. By H.J. Hollister, 4 p., October 20, 1960.

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1960–29. Oceanographic observations from weathership C.G.S. *St. Catharines*, cruise P-60-3, August 2–September 19, 1960. By D.G. Robertson and J. Butters, 9 p., November 29, 1960.

1960–30. B.C. coastal seawater temperatures for November 1960. By H.J. Hollister, 3 p., December 6, 1960.

1960–31. Coastal surveys along the west coast—October 3–9, 1960, and November 26–December 9, 1960. By R.K. Lane, 20 p., December 9, 1960.

1961–1. B.C. coastal seawater temperatures for December 1960. By H.J. Hollister, 4 p., January 10, 1961.

1961–2. Oceanographic observations from weathership C.M.S. *St. Catharines*, cruise P-60-4, October 26–December 12, 1960. By J.H. Meikle, 13 p., January 27, 1961.

1961-3. B.C. coastal seawater temperatures for January 1961. By H.J. Hollister, 4 p., February 13, 1961.

1961-4. Coastal survey off Vancouver Island, February 20–March 2, 1961. By R.K. Lane, 9 p., March 22, 1961.

1961-5. Cruise "Swiftsure" lightship to ocean weathership and seaways. By J. Butters, 9 p., March 28, 1961.

1961-6. Monitor project. By J.P. Tully, 11 p., April 4, 1961.

1961-7. Oceanographic observations from weathership C.M.S. *St. Catharines*, cruise P-61-1, January 17–March 6, 1961. By J.A. Coombs, 7 p., April 7, 1961.

1961-8. B.C. coastal seawater temperatures for February and March 1961. By H.J. Hollister, 5 p., April 19, 1961.

1961-9. Transport calculations for the North Pacific Ocean, January 1961. By N.P. Fofonoff and V.K. Jain, 12 p., April 26, 1961.

1961-10. Oceanographic conditions between "Swiftsure" lightship and ocean station "P," March 2–April 15, 1961. By Susumu Tabata, 6 p., April 25, 1961.

1961-11. Oceanographic survey of the northeast Pacific Ocean, May 15–July 2, 1961. By A.J. Dodimead, 5 p., April 24, 1961.

1961-12. Coastal survey off Vancouver Island, April 4–14, 1961. By R.K. Lane, 9 p., May 5, 1961.

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1961-14. Transport calculations for the North Pacific Ocean, April 1961. By V.K. Jain, 19 p., June 12, 1961.

1961-15. Oceanographic observations [from] weathership C.M.S. *St. Catharines*, cruise P-61-2, April 11–May 28, 1961. By W. Atkinson, 12 p., July 17, 1961.

1961-16. Changes of sea temperature between "Swiftsure" and ocean station "P," 25–28 May and 27 June–1 July, 1961. By S. Tabata, 2 p., July 17, 1961.

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1961-24a. Oceanographic observations from weathership C.M.S. *St. Catharines*, cruise P-61-3, June 27–August 7, 1961. By C.D. McAllister, 9 p., August 30, 1961.

1961-25. Transport calculations for the North Pacific Ocean, August 1961. By V.K. Jain, 19 p., September 28, 1961.

1961–26. Productivity studies at station "P," weathership cruise P-61-3, June 27–August 7, 1961. By C.D. McAllister and J. Yu, 5 p. (undated). [October 15, 1961.]

1961–27. Oceanographic cruise in the northeast Pacific, May 16–July 1, 1961. By A.J. Dodimead, N.K. Chippindale, and F.M. Boyce, 14 p., November 2, 1961.

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1962–6. Transport calculations for the North Pacific Ocean, December 1961. By C.K. Ross, 17 p., February 26, 1962.

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1962–13. Productivity cruise, C.N.A.V. *Oshawa*, April 16–May 3, 1962. By T.R. Parsons, 2 p., May 8, 1962.

1962–14. Transport calculations for the North Pacific Ocean, March 1962. By C.K. Ross, 17 p., May 14, 1962.

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1964–9. Surface temperatures along Line "P" and at ocean station "P." By D.G. Robertson, 6 p., July 31, 1964.

1964–10. Sea surface salinities at British Columbia coastal stations, January–May, 1964. By H.J. Hollister, 7 p., September 17, 1964.

1964–11. Surface seawater temperatures along the British Columbia coast, May to August, 1964. By H.J. Hollister, 5 p., September 18, 1964.

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(1) CIRCULARS [GENERAL SERIES] OF THE BIOLOGICAL STATION, ST. ANDREWS, N.B.,

of the Fisheries Research Board of Canada
(formerly the Atlantic Biological Station)

Abbreviation: CSG

1. Irish moss in the Maritime Provinces. By A.W.H. Needler. 8 p., March 1942.
2. Canadian Atlantic offshore fish landings, 1938–1940 inclusive. By R.A. McKenzie. 8 p., May 1943.
3. The Irish moss industry of the Maritime Provinces. By A.W.H. Needler, 9 p., May 1944.
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8. Improve trout angling by poisoning coarse fish. By M.W. Smith, 2 p., March 1947.
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25. Offshore and Newfoundland scallop explorations. By L.M. Dickie and L.P. Chiasson. 4 p., March 1955.
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29. Rehabilitation of disease-depleted oyster fisheries. By H.R. Found and R.R. Logie, 2 p., April 1957. (Also available in French.)
30. Offshore scallop explorations 1957. By G.M. Sommerville and L.M. Dickie, 4 p., September 1957.

31. Epidemic oyster disease and rehabilitation transfers in 1957. By R.R. Logie, 2 p., March 1958. (Also available in French.)
32. Useful publications for oyster farmers of the Maritimes. By J.C. Medcof, 3 p., October 1958. (Also available in French.)
33. Outlook for the Georges Bank scallop fishery. By N. Bourne, 2 p., September 1960.
34. Progress in rehabilitating disease affected oyster stocks. By R.E. Drinnan and J.C. Medcof, 3 p., October 1961.
35. Gulf of St. Lawrence scallop explorations—1961. By N. Bourne and A. McIver, 4 p., March 1962.
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37. Discards of cod at sea by otter trawlers. By Yves Jean, 3 p., December 1962. (Also available in French.)
38. Chemical conditions in the Northwest Miramichi River from 1960 to 1962. By John B. Sprague and W. Victor Carson, 4 p., April 1963.
39. Where do Seven Islands cod come from? By Yves Jean, 2 p., August 1963.
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42. Changes in mining pollution of the Northwest Miramichi River from June 30, 1960 to the end of 1963. By John B. Sprague and W. Victor Carson, 4 p., January 1964.
43. Northwest Atlantic tunas and bonitos. By S.N. Tibbo and R.A. McKenzie, 4 p., August 1964.

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(m) CIRCULARS [STATISTICAL SERIES] OF THE BIOLOGICAL STATION, ST. ANDREWS, N.B.,

of the Fisheries Research Board of Canada
(formerly the Atlantic Biological Station)

Abbreviation: CSS

1. 1947 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By W.R. Martin and F.D. McCracken, 12 p., May 1952.
2. 1948 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By W.R. Martin and F.D. McCracken, 10 p., August 1952.
3. 1949 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By F.D. McCracken and G. Sullivan, 8 p., February 1953.
4. 1950 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By G. Sullivan, 8 p., October 1953.
5. 1951 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By G.J.W. Sullivan and W.R. Martin, 12 p., December 1955.
6. 1952 landings of fresh groundfish by offshore vessels at Nova Scotia ports. By G.J.W. Sullivan and W.R. Martin, 12 p., December 1955.
7. 1953 landings of Atlantic groundfish in Canada (excluding Newfoundland). By W.R. Martin and G.J.W. Sullivan, 10 p., February 1957.

8. 1954 landings of Atlantic groundfish in Canada (excluding Newfoundland). By W.R. Martin and G.J.W. Sullivan, 10 p., December 1957.
9. 1955 landings of Atlantic groundfish in Canada (excluding Newfoundland). By W.R. Martin and G.J.W. Sullivan, 10 p., December 1957.

(A continuing series)

(n) INDUSTRIAL MEMORANDA OF THE TECHNOLOGICAL STATION, VANCOUVER, B.C.

of the Fisheries Research Board of Canada
(formerly the Pacific Fisheries Experimental Station
at Prince Rupert, B.C., later at Vancouver)

Abbreviation: CVI

1. Pilchard oil varnish base. By H.N. Brocklesby, 2 p., September 1935.
2. Instructions for making an improved type of ice glaze for frozen fish. Anon., 3 p., May 1, 1936.
3. The proximate analyses of some canned northern British Columbia shellfishes. By L.I. Pugsley, 1 p., April 20, 1938.
4. Vitamin A and D potency of B.C. pilchard oil. By L.I. Pugsley, 1 p., March 15, 1939.
5. Smoked salmon—a possible partial substitute for bacon. Anon., 2 p., November 19, 1941.
6. Vitamin A investigations. By H.N. Brocklesby, N.I. Rogers, L.A. Swain, and B.E. Bailey, 10 p., December 22, 1941.
7. Specialty products from smoked and cooked fish. By A.W. Lantz, 3 p., March 14, 1945.
8. Oil and vitamin A in British Columbia flatfish livers. By L.A. Swain and B.H. McKercher, 3 p., November 12, 1946.
9. Analyses of freshwater fishes from Canadian interior provinces. By P.J. Schmidt and N.M. Carter, 5 p., August 1, 1948.
10. Utilization of whales. By Norman E. Cooke and N.M. Carter, 11 p., October 15, 1948.
11. Essential amino acid distribution in various fish products. By Catharine P. Deas, Phyllis W. Ney, and H.L.A. Tarr, 8 p., January 31, 1949.
12. Analyses of freshwater fishes from Canadian interior provinces. By P.J. Schmidt, 10 p., May 25, 1949.
13. Analyses of freshwater fishes from Canadian interior provinces. By P.J. Schmidt, 8 p., July 10, 1950.
14. Utilization of sperm oil. By B.E. Bailey, 3 p., July 10, 1950.
15. The effects of different methods of preservation on the nutritive factors in fish. By B.E. Bailey, 4 p., April 20, 1951.
16. A chemical engineering report on the economic possibility of the large-scale recovery of by-products from salmon viscera. By Norman E. Cooke, 14 p., March 31, 1954.
17. Distribution of certain vitamins and essential amino acids in the edible portion of fish, shellfish and whales (wet weight basis). By H.L.A. Tarr, 2 p., December 1, 1954.
18. Experimental synthetic fibre drum seines, 1955. By P.J.G. Carrothers, 16 p., January 1956.
19. The selection and care of nylon gill nets for salmon. By P.J.G. Carrothers, 102 p., May 1957.
20. Control of post-mortem bacterial spoilage of whales with antibiotics: details of 1956 and 1957 experiments. By D.W. Duncan, J. Leung, J.W. Boyd, N.A.W. LePage, C.R. Muirhead, and H.L.A. Tarr, 11 p., September 1957.

(Series continued as Circulars, commencing with No. 21. Listing of these follows.)

(o) CIRCULARS [GENERAL SERIES] OF THE TECHNOLOGICAL STATION, VANCOUVER, B.C.

of the Fisheries Research Board of Canada

This series is a continuation of the preceding series of Industrial Memoranda, under the designation of Circulars, without interruption of numbering.

Abbreviation: CVG

21. Measurement of the viscosity of herring solubles. By W.A.B. Thomson, R.E.E. Jonas, R.A. MacLeod, and D.R. Idler, 5 p., April 1958.

22. Selected publications concerning smoked fish. 5 p., May 1958.

23. Packaging frozen fish. By R.H. Moyer, 7 p., September 1960.

24. The known nutritional properties of British Columbia and related herring meals. By H.L.A. Tarr, 12 p., September 1960.

25. Nutritional and chemical changes in the lipid fraction of stored antioxidant-treated and untreated herring meals. By B.E. March, J. Biely, F.G. Claggett, and H.L.A. Tarr, 13 p., December 1961.

26. Nutrient composition of British Columbia whole herring meal. By B.E. March, Jacob Biely, and H.L.A. Tarr, 11 p., September 1962.

27. Tuna freezing equipment for British Columbia seine boats. By S.W. Roach and J.S.M. Harrison, 5 p., January 1963.

28. A new method for pumping fish. By S.W. Roach, F.G. Claggett, and J.S.M. Harrison, 4 p., May 1963.

29. An air-lift pump for elevating salmon, herring and other fish of similar size. By S.W. Roach, F.G. Claggett, and J.S.M. Harrison, 7 p., September 1963.

30. Salmon packing: Equipment and operation. By S.W. Roach and F.G. Claggett, 7 p., May 1964.

31. Influence of type of freezer-carton materials on moisture loss from frozen fish during storage. By J.W. Boyd, B.A. Southcott, and D. Petrie, 8 p., July 1964.

32. Bulk handling of B.C. whole herring meal. By F.G. Claggett, 7 p., July 1964.

33. Chalky halibut. By N. Tomlinson, S.E. Geiger, and E. Dollinger, 8 p., November 1964.

(A continuing series)

7. MISCELLANEOUS SPECIAL PUBLICATIONS

of the Biological Board of Canada
and its successor
the Fisheries Research Board of Canada

Abbreviation: MSP

Listing of the Biological Board "Leaflet" series is included here since there is little record of their intended purpose or the distribution they received; no record can be found of the title of Leaflets No. 2 and 4, or whether any were issued after No. 5.

1. Leaflet No. 1. The lumpfish, a new foodfish. Anon., 1 p., 1929. (A brief description, and announcing the forthcoming Bulletin No. 2 of the Board.)
2. Leaflet No. 3. The bait question. By A.G. Huntsman, 4 p., 1929.
3. Leaflet No. 5. Spoiling of fish, its nature and rapidity. By Louis Gross, 2 p., 1929.
4. Statement on the glass-like crystals sometimes found in canned salmon. By N.M. Carter. 1 p., not dated. (Reprinted several times for supplying in quantity to wholesalers and retailers of canned salmon for replying to customer complaints. Title later changed to: Statement on the glass-like crystals sometimes found in canned salmon, canned tuna, and some other canned marine products.)
5. Statement on the white coagulated material ("curd") sometimes found in canned salmon. By N.M. Carter, 1 p., not dated. (Reprinted several times for the purpose described under No. 4 above.)
6. 25th aniversary of the Fisheries Research Board of Canada Fisheries Experimental Station. Vancouver, B.C. By N.M. Carter, 4 p., 1951. (A brief history of the Station, with pictures of its various housings since its establishment in Prince Rupert.)
7. Office des Recherches sur les Pêcheries du Canada, Station Technologique, Grande-Rivière. 1936–1961. By R. Legendre, 16 p., 1961. (An illustrated brochure commemorating the 25th anniversary of the Station, giving a resumé of its history and work.) (French and English text.)

(Not intended as a continuing series, but items of the type listed may from time to time be designated as "Miscellaneous Special Publications.")

(There probably are other miscellaneous special publications that have been issued by the Board or its Stations but which, because of limited distribution or insufficient records, have inadvertently failed to get included in the above list. Two attractively bound brochures commemorating the 50th anniversary of the Board's Biological Station at Nanaimo, B.C., and at St. Andrews, N.B., were issued in 1958, but as their contents were respectively separates of the historical articles that appeared on pages 759–777 and 1127–1161 of Volume 15 of the Board's Journal (1958), they are not included in this list.)

8. BULLETINS OF THE NEWFOUNDLAND GOVERNMENT LABORATORY

(a) NEWFOUNDLAND RESEARCH BULLETINS

Abbreviation: NRB

1. Biology of the salmon (*Salmo salar* L.) taken in Newfoundland waters in 1931. By Sheila Taylor Lindsay and Harold Thompson, 80 p., 1932. (Formerly Vol. 1, No. 2 of Reports of Newfoundland Fishery Research Commission.)
2. Observations on the economic biology of the caplin (*Mallotus villosus*, O.F. Müller). By G.F. Sleggs, 66 p., 1932. (Formerly Vol. 1, No. 3 of Reports of Newfoundland Fishery Research Commission.)
3. (Faunistic Series, No. 1). I. Amphipoda from Newfoundland waters. II. Decapod larvae from Newfoundland waters. By Nancy Frost, 24 p., 1936.
4. Some fishes of Newfoundland waters. By Nancy Frost, 16 p., 1938.
5. The genus "*Ceratium*" and its use as an indicator of hydrographic conditions in Newfoundland waters. By Nancy Frost, 15 p., 1938.
6. The occurrence and biological features of haddock in the Newfoundland area. By Harold Thompson, 31 p., 1939.
7. Investigations into the life history of the lobster (*Homarus americanus*) on the west coast of Newfoundland, 1938. By W. Templeman, 52 p., 1939.
8. Lobster tagging on the west coast of Newfoundland, 1938. By W. Templeman, 16 p., 1940.
9. A preliminary study of Newfoundland trout. By Nancy Frost, 30 p., 1940.
10. The washing of berried lobsters and the enforcement of berried lobster laws. By W. Templeman, 21 p., 1940.
11. The Newfoundland lobster fishery: An account of statistics, methods and important laws. By W. Templeman, 42 p., 1941.
12. Salmon investigations: 1. Obstructions in Newfoundland and Labrador rivers. By A.A. Blair, 50 p., 1943.
13. Salmon investigations: 2. Atlantic salmon of the east coast of Newfoundland and Labrador, 1939. By A.A. Blair, 21 p., 1943.
14. A biological and economic study of cod (*Gadus callarias* L.). By Harold Thompson, 160 p., 1943.
15. The life-history of the spiny dogfish (*Squalus acanthias*) and the vitamin A values of dogfish liver oil. By Wilfred Templeman, 102 p., 1944.
16. Lobster investigations in Newfoundland, 1938 to 1941. By Wilfred Templeman and S. Noel Tibbo, 98 p., 1945.
17. Life history of the caplin (*Mallotus villosus*, O.F. Müller) in Newfoundland waters. By Wilfred Templeman, 151 p., 1947.
18. a. Abnormalities in lobsters. b. A possible substitute for the plugging and banding of lobster claws. c. Body form and stage identification in the early stages of the American lobster. d. Growth per moult in the American lobster. By W. Templeman. 48 p., 1948.

(This series is discontinued)

(b) NEWFOUNDLAND SERVICE BULLETINS

Abbreviation: NSB

1. The dried codfish industry. By N.L. Macpherson, 56 p., 1935. (Formerly Vol. II, No. 4, of Reports of Newfoundland Fishery Research Commission.)
2. Memorandum on the lobster industry. By Harold Thompson, 23 p., 1934.
3. Newfoundland cod liver oil. By N.L. Macpherson, 43 p., 1937.
4. "Pink" fish—Its cause and prevention. By W.F. Hampton, 11 p., 1938.
5. The dogfish and how it can be used. By W.F. Hampton, 6 p., 1938.
6. Trout and their conservation. By Nancy Frost, 16 p., 1938.
7. Production and composition of commercial salt. By Anna M. Wilson, 14 p., 1938.
8. Newfoundland fishes. A popular account of their life histories. By Nancy Frost. Parts I and II, p. 1–29, 1938; Parts III and IV, p. 30–45, 1939.
9. Approved methods of handling codfish for salting and drying. By W.F. Hampton, 17 p., 1938.
10. Production of fish meal with simple home-made equipment. By J.F. Murphy, 13 p., 1939.
11. Fish meal and its uses. By Anna M. Wilson, 22 p., 1939.
12. Elementary principles of food preservation. By W.F. Hampton, 11 p., 1939.
13. A guide to canning practice. By W.F. Hampton, 28 p., 1939.
14. Newfoundland flat-fishes. A popular account of their life histories. By Nancy Frost, 23 p., 1940.
15. The life history of the lobster. By W. Templeman, 42 p., 1940.

(This series is discontinued)

9. STUDIES FROM THE BOARD'S ESTABLISHMENTS

Abbreviation: S

1. The Isopoda of the Bay of Fundy. By N.A. Wallace. University of Toronto Studies, Biological Series, No. 18, p. 1–42, 1919.
2. Argulidae from the Shubenacadie River, Nova Scotia. By Charles Branch Wilson. Canadian Field-Naturalist, **34**(8): 149–151, 1920.
3. Arctic Copepoda in Passamaquoddy Bay. By A. Willey. Proceedings of the American Academy of Arts and Sciences, **56**(5): 185–196, 1921.
4. A new species of *Spirontocaris* with notes on other species from the Atlantic coast. By A.H. Leim. Transactions of the Royal Canadian Institute, **13**: 133–145, 1921.
5. Faunal notes from the Atlantic Biological Station (1920). By A. Willey and A.G. Huntsman. Canadian Field-Naturalist, **35**(1): 1–7, 1921.
6. The success of reproduction in *Sagitta elegans* in the Bay of Fundy and the Gulf of St. Lawrence. By A.G. Huntsman and Margaret E. Reid. Transactions of the Royal Canadian Institute, **13**(2): 99–112, 1921.
7. A further study of the respiratory processes in *Mya arenaria* and other marine Mollusca. By J.B. Collip. Journal of Biological Chemistry, **49**(2): 297–310, 1921.
8. Retinal reflexes of narcotized animals to sudden changes of intensity of illumination. By A.T. Cameron and C.H. O'Donoghue. Biological Bulletin, **42**(5): 217–233, 1922.
9. A new *Cyclocypris* from eastern Canada. By A. Brooker Klugh. Transactions of the Royal Canadian Institute, **14**: 337–342, 1923.
10. On the occurrence of manganese in the tube and tissues of *Mesochaetopterus taylori* Potts, and in the tube of *Chaetopterus variopedatus* Renier. By Cyril Berkeley. Biochemical Journal, **16**(1): 70–77, 1922.
11. On a new heliozoon from Vancouver Island. By Chas. H. O'Donoghue. Canadian Field-Naturalist, **35**(6): 101–102, 1921.
12. Notes on the nudibranchiate Mollusca from the Vancouver Island region: I. Colour variations. By Chas. H. O'Donoghue. II. The spawn of certain species. By Chas. H. O'Donoghue and Elsie O'Donoghue. III. Records of species and distribution. By Chas. H. O'Donoghue. Transactions of the Royal Canadian Institute, **14**: 123–167, 1922.
13. On pentose compounds in tissues of marine animals. By Cyril Berkeley. Transactions of the Royal Society of Canada, Ser. 3, **15**(Sect. 5): 41–47, 1921.
14. An organic constituent of the tube of *Mesochaetopterus taylori* Potts. By C. Berkeley. Journal of Biological Chemistry, **50**(1): 113–120, 1922.
15. The rate of growth of the sea mussel (*Mytilus edulis* L.) at St. Andrews, New Brunswick; Digby, Nova Scotia; and in Hudson Bay. By Bessie K.E. Mossop. Transactions of the Royal Canadian Institute, **14**: 3–22, 1922.
16. On the crystalline style as a possible factor in the anaerobic respiration of certain marine mollusks. By C. Berkeley. Journal of Experimental Zoology, **37**(5): 477–488, 1923.
17. The source of insulin. A study of the effect produced on blood sugar by extracts of the pancreas and principal islets of fishes. By J.J.R. Macleod. Journal of Metabolic Research, **2**: 149–172, 1922.
18. The Islands of Langerhans in elasmobranch and teleostean fishes. Part 1. The Islands of Langerhans in the skate. By Slater Jackson. Ibid., **2**(Pt. 1, No. 1): 111–118, 1922.

19. Marine wood borers in British Columbia waters. By C. McLean Fraser. Transactions of the Royal Society of Canada, Ser. 3, **17**(Sect. 5): 21–28, 1923.

20. The influence of tidal oscillations on vertical circulation in estuaries. By A.G. Huntsman. Ibid., Ser. 3, **17**(Sect. 5): 11–14, 1923.

21. The importance of tidal and other oscillations in oceanic circulation. By A.G. Huntsman. Ibid., Ser. 3, **17**(Sect. 5): 15–20, 1923.

22. The distribution of pentose compounds in the pancreatic tissues of the ling cod (*Ophiodon elongatus* Girard). By C. Berkeley. Journal of Biological Chemistry. **58**(2): 611–616, 1923.

23. An approximative colorimetric method for the determination of urea, with an application to the detection and quantitative estimation of arginase. By Andrew Hunter and James A. Dauphinee. Proceedings of the Royal Society [London], B, **97**: 209–226. 1925.

24. The distribution and structure of the Islands of Langerhans in certain fresh-water and marine fishes. By N.A. McCormick. Transactions of the Royal Canadian Institute, **15**(Pt. 1): 57–81, 1924.

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26. The effect on the blood sugar of fish of various conditions including removal of the principal islets (isletectomy). By N.A. McCormick and J.J.R. Macleod. Ibid., **98**: 1–29, 1925.

27. Ecological photometry and a new instrument for measuring light. By A. Brooker Klugh. Ecology, **6**(3): 203–237, 1925.

28. Some new or rare Protozoa from British Columbia. By G.H. Wailes. Annals and Magazine of Natural History, Ser. 9, **16**: 40–48, 1925.

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38. Lactic acid and rigor mortis in fish muscle. By A.D. Ritchie. Journal of Physiology, **61**: 4–5, 1926.

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40. The comparative thanatology of marine animals. By A.G. Huntsman. Transactions of the Royal Society of Canada, Ser. 3, **20**(Sect. 5): 187–208, 1926.

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56. A bio-hydrographical investigation of the sea adjacent to the Fraser River mouth. Part I. The effect of Fraser River water on the physical and chemical properties of the adjacent sea. By C.C. Lucas. Part II. The factors affecting the distribution of phytoplankton in the sea adjacent to the Fraser River mouth. By A.H. Hutchinson. Transactions of the Royal Society of Canada, Ser. 3, **21**(Sect. 5): 485–520, 1927.

57. The digestive system and its function in *Fundulus heteroclitus*. By B.P. Babkin and D.J. Bowie. Biological Bulletin, **54**(3): 254–277, 1928.

58. Reactions of an elasmobranch (*Squalus sucklii*) to variations in the salinity of the surrounding medium. By J.P. Quigley. Ibid., **54**(2): 165–186, 1928.

59. Reducing substances in the blood of the dogfish *Squalus sucklii*, and certain other fishes. By F.D. White. Journal of Biological Chemistry, **77**(2): 655–669, 1928.

60. The identification and validity of certain species of ascidians. By N.J. Berrill. Journal of the Marine Biological Association of the United Kingdom, **15**(1): 159–175, 1928.

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62. A preliminary report on the fishes of the Hudson Bay drainage system. By Alexander Bajkov. Ibid., **42**: 96–99, 1928.

63. Hydrogen ion concentration of fish muscle. By C.C. Benson. Journal of Biological Chemistry, **78**(3): 583–590, 1928.

64. Notes on the distribution of some decapod Crustacea collected near Sidney, B.C. By Gertrude M. Smith. Canadian Field-Naturalist, **42**(7): 163–165, 1928.

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67. Notes on the relation of temperature, hydrogen-ion concentration and oxygen, to the migration of adult sockeye salmon. By R.E. Foerster. Canadian Field-Naturalist, **43**(1): 1–4, 1929.

68. Relation of the liver to asphyxial hyperglycaemia in fishes. By W.W. Simpson. Quarterly Journal of Experimental Physiology, **19**(2): 197–199, 1928.

69. Some marine insects of the Pacific coast of Canada. By L.G. Saunders. Annals of the Entomological Society of America, **21**(4): 521–545, 1928.

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71. The digestive system of the eel-pout (*Zoarces anguillaris*). By Margaret E. MacKay. Ibid., **56**(1): 8–23, 1929.

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75. A bio-hydrographical investigation of the sea adjacent to the Fraser River mouth. Paper II. Factors affecting the distribution of phytoplankton. By A.H. Hutchinson. Ibid., Ser. 3, **22**(Sect. 5): 293–310, 1928.

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77. Contributions to the life-history of the sockeye salmon. (No. 13.) By Wilbert A. Clemens and Lucy S. Clemens. Report of the British Columbia Commissioner of Fisheries for 1927, p. 16–38, 1928.

78. Digestion in ascidians and the influence of temperature. By N.J. Berrill. British Journal of Experimental Biology, **6**(3): 275–292, 1929.

79. The effect of the ultra-violet component of sunlight on certain marine organisms. [Part 1.] By A. Brooker Klugh. Canadian Journal of Research, **1**(1): 100–109, 1929.

80. A preliminary quantitative study of the zooplankton in the Strait of Georgia. By Mildred H. Campbell. Transactions of the Royal Society of Canada, Ser. 3, **23** (Sect. 5): 1–28, 1929.

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82. Further observations on the distribution of arginase in fishes. By Andrew Hunter. Ibid., **81** (3): 505–511, 1929.

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85. The trout of British Columbia. By J.R. Dymond. Ibid., **58**: 71–77, 1928.

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89. The discoloration of halibut. By F.C. Harrison. Canadian Journal of Research, **1** (3): 214–239, 1929.

90. Contributions to the life-history of the sockeye salmon. (No. 11.) By Wilbert A. Clemens and Lucy S. Clemens. Report of the British Columbia Commissioner of Fisheries for 1925, p. 18–39, 1926.

91. Contributions to the life-history of the sockeye salmon. (No. 12.) By Wilbert A. Clemens and Lucy S. Clemens. Ibid., 1926, p. 29–57, 1927.

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103. An ultraviolet photometer for field use. By A. Brooker Klugh. Ecology, **11**(3): 518–522, 1930.

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(This is a continuing series)

10. STUDIES SUPPLEMENT

Abbreviation: SS

(Certain reports of investigations conducted by, or under the auspices of, the Board of Management of the Marine Biological Station of Canada (1899–1911), its successor the Biological Board of Canada (1912–1937), and its successor the Fisheries Research Board of Canada (from 1938), which appeared in other than the Boards' publications but did not get included in the Studies.) (See also further information concerning these, under Section II.10 in the Preface.)

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